CLADDING SAFETY VICTORIA

REACTION TO FIRE TEST REPORT

Test standard: BS 8414-2:2015
Test sponsor: Cladding Safety Victoria
Products: Rendered EPS façade system incorporating an AAC section and a return wall
Job number: RTF250873
Revision: RR1.0
Test date: 24 July 2025

Accredited for compliance with ISO/IEC 17025:2017 – Testing

JENSEN HUGHES

Quality management

Revision	Date	Revision description		
RR1.0	26 November 2025	Initial issue.		
		Prepared	**Reviewed**	**Authorised**
		[redacted]	[redacted]	[redacted]

Jensen Hughes Fire Testing Pty Ltd
ABN 81 050 241 524
Formerly Warringtonfire Australia Pty Ltd[1]

[1] Warringtonfire Australia Pty Ltd was acquired by Jensen Hughes in December 2023. Jensen Hughes Fire Testing Pty Ltd is not affiliated, associated, authorised, or endorsed by Warringtonfire Australia Pty Ltd, Warringtonfire Testing and Certification Limited or its "Warringtonfire" or "Certifire" brands.

Executive summary

This report documents the findings of the reaction to fire test for a non-loadbearing external wall system performed on 24 July 2025 in general accordance with BS 8414-2:2015.

Jensen Hughes performed the test at the request of Cladding Safety Victoria.

Table 1 provides details of the test assembly, and Table 1 provides a summary of the test specimen. A summary of the results is provided in Table 2.

Table 1 Test assembly details

Item	Detail	
Nominal non-loadbearing wall system	Height	3000 mm
	Thickness	180 mm
Nominated length of main wall, finished face	5715 mm	
Nominated length of wing wall, finished face	5000 mm	
Nominated length of return wall, finished face	1000 mm	

Table 2 Test specimen summary

Item	Detail
Test specimen	+ The façade consisted of a 90 mm MGP10 timber framing that was clad on the unexposed side with 10 mm regular plasterboard and rendered 75 mm thick extruded polystyrene (EPS) panels on the exposed side. + A 3000 mm tall × 405 mm wide × 75 mm thick AAC panel was installed as fire break on the main wall. The wing wall and return wall were just EPS panels. + The cavity of the timber framing was filled with R1.5 glasswool insulation, and at the top of the wall a C-channel purlin was installed in place to mimic a gutter protruding from the top of the wall. The cavity of the timber framing behind the AAC panel was filled with 100 mm thick mineral wool. + A four-coat render system was applied on to the face of the 75 mm EPS and AAC panels, which started with a 3 mm thick base coat, followed by a layer of primer before the top texture render was applied. Two applications of waterproofing membrane were then applied over the textured render. The total thickness of the render applied was 4-5 mm.

Table 3 Test results summary

Parameter	Results
t_s, start time	2 minutes 10 seconds after ignition of crib
Peak temperature/time at Level 1, 50 mm external	1002 °C at 18 minutes 21 seconds after t_s

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1.0 Introduction

This report documents the findings of the reaction to fire test for a non-loadbearing external wall system performed on 24 July 2025 in general accordance with BS 8414-2:2015.

Jensen Hughes performed the test at the request of the test sponsor listed in Table 4.

Table 4 Test sponsor details

Test sponsor	Address
Cladding Safety Victoria	717 Bourke Street Docklands VIC 3808 Australia

2.0 Test specimen

2.1 Schedule of components

Table 5 describes the test specimen and lists the schedule of components. These were provided by the test sponsor and surveyed by Jensen Hughes. All measurements were done by Jensen Hughes – unless indicated otherwise.

Detailed drawings of the test specimen are provided in Appendix A.

Table 5 Schedule of components

Item	Description	
Cladding		
1.	Item name	EPS panels
	Product name	[redacted]
	Material	Approximately 75 mm thick medium grade EPS with a flame-retardant additive and a density of 20 kg/m^3 with one of the large faces covered by a layer of render with a thickness of approximately 1 mm. Within the render facing was a layer of alkaline-resistant 145 GSM fiberglass mesh with a thickness of 0.4 mm and a 6 × 4 mm grid.
	Size	2400 mm long × 1200 mm wide × 76 mm thick
	Mass per area	2.7 kg/m^2
	Manufacturer	[redacted]
	Batch	Unknown
2.	Item name	75 mm autoclaved aerated concrete (AAC) panel
	Size	3000 mm long × 405 mm wide × 75 mm thick
	Volumetric density	550 kg/m^3
	Supplier	[redacted]
	Batch date	Unknown
3.	Item name	Internal lining
	Product name	[redacted]
	Size	3000 mm long × 1200 mm wide × 10 mm thick
	Areal density	6.2 kg/m^2
	Manufacturer	[redacted]
	Batch date	12/05/2025
Framing		
4.	Item name	Timber framing
	Material	90 × 45 mm MGP10 timber with a density of 430 kg/m^3 with a moisture content of approximately 9 %
	Size	The full frame for the EPS panels (item 1) was approximately 3000 mm tall × 5785 mm wide × 90 mm deep for the main wall approximately 3000 mm tall × 3275 mm wide × 90 mm deep for the wing wall and approximately 3000 mm tall × 1000 mm wide × 90 mm deep for the return wall. Studs were at 450 mm centres whilst the noggings were at approximately 1000 mm centres. Where there was a vertical EPS panel joint, a double stud was incorporated for the height of the joint.

Item	Description	
	Batch date	13-05-25
5.	Item name	Window lintel
	Material	190 × 45 mm MGP10 timber with a density of 430 kg/m^3 with a moisture content of approximately 9 %
	Size	Two 190 × 45 mm timber members were laminated to make up a 90 mm thick lintel and was installed horizontally as the window lintel.
	Batch date	Unknown
Flashing		
6.	Item name	Corner beads – aluminium with fiberglass mesh
	Size	22 mm × 22 mm × 0.32 mm thick perforated angle. The angle contained Ø8 mm perforations at repeating 12 mm centres on each flange. On the external corner was fixed an angled fiberglass mesh approximately 85 mm × 115 mm. Mesh: 4 mm × 6 mm grid, 0.4 mm thick, 141 GSM.
	Installation	Installed on all external corners of the specimen fitted around the rendered wall system. It was placed in conjunction with the render (item 19).
	Supplier	[redacted]
	Batch	Unknown
7.	Item name	Timber reveal and packers
	Size	Vertical reveal timber: 110 mm deep × 17.8 mm thick × 2000 mm tall. Painted white. Mass per linear metre: 1.1 kg/m Horizontal reveal timber: 110 mm deep × 17.8 mm thick × 2032 mm long. Painted white. Mass per linear metre: 1.1 kg/m Plastic packers: ~ 10 mm thick
	Installation	The head of the reveal was screw fixed to the vertical members. To the exposed side of the reveal the aluminium window framing (item 8) was screw fixed (item 26) at approximately 200 mm centres. The reveal assembly was then placed inside the timber framing (item 4) with the packers in between the vertical reveal timber and the timber frame and was screw fixed (item 26) at 300 mm centres.
	Supplier	[redacted]
	Batch	Unknown
8.	Item name	Aluminium extrusion – window framing
	Size	75 mm total depth × 33 mm visible width × 1.5 mm thick
	Installation	Screw fixed to the exposed side of the timber reveal at ~200 mm centres using plasterboard screws (item 26).
	Manufacturer	[redacted]
	Batch	Unknown
9.	Item name	Aluminium starter channel
	Size	0.6 mm thick angled channel with a 78 mm deep web with 2 perforated flanges - 50 mm and 25 mm long.
	Installation	Installed on the bottom of the EPS panels (item 1). Friction fitted and screw (item 26) fixed at 300 mm centres to the EPS panel face (item 1) only.
	Supplier	[redacted]

Item	Description	
	Batch	Unknown
10.	Item name	Steel C-channel purlin, replicating projection of a gutter
	Size	1.9 mm thick × 200 mm wide × 78 mm flange with a 20 mm fold at the end
	Installation	Installed on the top of the EPS panel (item 1) extending 132 mm over the rendered panels. Screw (item 24) fixed at 300 mm centres to the timber framing (item 4).
	Supplier	[redacted]
	Batch	Unknown
11.	Item name	Rubber infill aluminium control joint spacer
	Size	0.6 mm thick × 73 mm wide with an 8 mm × 8 mm square rubber strip running centrally along the length. The side flanges were 32 mm wide with an 8 mm folded leg on the rubber strip side.
	Installation	Installed between the panel to panel control joint between the EPS panels (item 1). The rubber strip was removed after the base coat curing, leaving the two side flanges embedded into the render system.
	Supplier	[redacted]
	Batch	Unknown
Sarking		
12.	Item name	Breathable sarking
	Size	2750 mm wide × 0.35 mm thick 100 GSM
	Installation	The sarking was installed horizontally over the timber frame (item 4) with a 200 mm overlap of the top sheet over the bottom. The sarking was fixed using 10 mm staples (item 28) at approximate 200 mm centres around the tracks and up the studs.
13.	Item name	FR sealing membrane – PVC coated polyester fabric
	Size	0.3 mm thick × 75 mm wide
	Installation	Used to tape the sarking (item 12) joints and around the reveal.
	Supplier	[redacted]
	Batch	Unknown
Insulation		
14.	Item name	R1.5 Glasswool insulation
	Product name	[redacted]
	Size	75 mm × 580 mm × 1160 mm
	Density	12.3 kg/m^3 (uncompressed)
	Batch	3422417-3
	Manufacturer	[redacted]
15.	Item name	100 mm mineral wool
	Thickness	100 mm
	Density	60 kg/m^3 (uncompressed)
	Batch	Unknown
	Supplier	[redacted]

Item	Description	
Render/Sealant/Adhesive		
16.	Item name	Expandable foam
	Product name	[redacted]
	Material	Polyurethane-based foam
	Installation	Applied at the panel to panel butt joints.
	Batch	FM330341683
	Manufacturer	[redacted]
17.	Item name	Glass fibre rope
	Material	Glass fibre
	Size	Ø12.5 mm
	Installation	Installed between the AAC to EPS panel control joint.
	Batch	0351
	Manufacturer	[redacted]
18.	Item name	Silicone sealant
	Product name	[redacted]
	Material	White weather proofing silicone sealant.
	Installation	Applied at the panel to panel control joint and at the panel and the timber reveal junction.
	Batch	~~TBC~~Unknown
	Manufacturer	[redacted]
19.	Item name	Polymer sealant
	Product name	[redacted]
	Material	Hybrid polymer sealant
	Installation	Applied at the AAC to EPS panel control joint.
	Batch	W2410037
	Manufacturer	[redacted]
20.	Item name	Render, primer and texture (white)
	Material	Render (grey): High polymer-containing cementitious basecoat modified for EPS render with 10 – 35% Portland cement Thickness: Approximately 2.5 mm Density: 1896 kg/m^3 Rendercoat primer: tintable acrylic primer Thickness: Approximately 0.5 mm Texture (white): A marble/acrylic paint mix. Thickness: Approximately 1 mm Density: 1550 kg/m^3 Top membrane (clear): A waterproofing membrane Thickness: Approximately 0.5 mm Total render system (including that of EPS board):

Item	Description	
		Mass per unit area: 6.6 kg/m^2 Free moisture content: approximately 3 % Thickness: Approximately 4-5 mm
	Installation	The render was mixed with water and applied over the EPS panels (item 1). Two coats of base coat render were applied, with alkaline resistant mesh (item 22) embedded between coats. The render was allowed to cure for 24 hours. Then primer was added over the render and allowed to dry for 2 hours. The texture was then applied over the top in one application and allowed to cure for 24 hours. The top membrane was applied afterwards, and the full system was allowed to cure for atleast 6 days before testing.
	Batches	[redacted]
21.	Item name	Sticky mesh tape – red
	Material	Fibreglass grid: 5 mm by 5 mm grid. 150 mm wide × 0.4 mm thick.
	Installation	Applied in combination with render (item 19) over the EPS panel to panel joints.
	Supplier	[redacted]
	Batch	Unknown
22.	Item name	Alkaline resistant fiberglass wall mesh
	Material	Fibreglass grid: 5 mm by 5 mm grid. 1185 mm wide × 0.45 mm thick Weight : 160 GSM (nominated)
	Installation	Embedded into the base coat render (item 19) during the render process.
	Supplier	[redacted]
	Batch	Unknown
23.	Item name	Expansion joint filler
	Product name	[redacted]
	Material	75 mm wide × 10 mm thick Density : 24 kg/m^3
	Installation	Used to fill in the control joint of the panels (item 1).
	Manufacturer	[redacted]
	Batch	Unknown
Fixings		
24.	Item name	Ø5.4 × 65 mm long hex head (male) screws – 50 mm long thread SDS
	Installation	Used to fix the timber framing (item 4) to the false slabs (item 32) and to fix the purlins (item 10) in place at the top of the specimen.
	Supplier	[redacted]
	Batch	Unknown
	Item name	8g × 45 mm long treated pine screw - coarse thread, sharp point, Philips drive

Item	Description	
25.	Installation	Used to fix the horizontal aluminium starter channel (item 9) to the panel face (item 1), as well as the timber reveal (item 7) to the aluminium extrusions
	Supplier	[redacted]
	Batch	Unknown
26.	Item name	#6 × 32 mm long plasterboard screws – coarse thread, needle point
	Installation	Used to screw fix the plasterboard (item 2) to the timber framing (item 4). Screw centre were 400 mm centres in-field and 300 mm centres around the perimeter.
	Supplier	[redacted]
	Batch	Unknown
27.	Item name	EPS board screws with nylon washer
	Size	Screw: 130 mm long × Ø5.0 mm class 3, bugle head, needle point Washer: O.D. ~48 mm, I.D. (for screw) 6 mm, Min/max thickness: 1 mm/7 mm.
	Manufacturer	[redacted]
	Batch	Unknown
	Installation	Used to fix the EPS panels (item 1) to the timber framing (item 4).
28.	Item name	10 mm long × 10 mm wide staples
	Installation	Used to fix the sarking (item 12) to the timber frame (item 4).
	Manufacturer	[redacted]
	Batch	Unknown
29.	Item name	Ø3 mm × 70 mm long nails
	Installation	Used to fix timber framing (item 4) members together. Two nails were used at each end of the noggings and at the top and bottoms of each stud.
	Supplier	Bunnings
	Batch	Unknown
30.	Item name	Concrete anchor
	Installation	Used to fix timber framing (item 4) to the concrete floor.
	Supplier	[redacted]
	Batch	Unknown
31.	Item name	#6 × 20 mm long bugle head screws - coarse thread, self-drilling, Philips drive
	Installation	Used to fix the aluminium extrusion (item 8) to the timber reveal (item 7).
	Supplier	[redacted]
	Batch	Unknown
Steel substrate		
32.	Item name	Steel substrate
	Size	The steel substrate was 9300 mm high × 3245 mm wide for the main wall and 9300 mm high × 2000 mm wide for the wing wall
	Installation	The substrate consisted of structural steel sections and square hollow sections (SHS). In addition, movable SHS - 150 mm × 150 mm, acting as a false slab were also present. It was located at 3075 mm from the ground (measured from the centre of the false slab).

Item	Description	
Installation method		
EW	Overall size	Main wall – 5715 mm × 3000 mm × 180 mm thick Wing wall – 5000 mm × 3000 mm × 180 mm thick Front return wall – 1000 mm × 3000 mm × 180 mm thick
	Installation	To be read in conjunction with the drawings in Appendix A. The timber framing (item 4) was first assembled and installed on ground level extending up to 1st false slab level (item 32) with top plate fixed to false slab using hex head screws (item 24) and the bottom plate fixed into the concrete floor using concrete anchors (item 25), at 600 mm centres respectively. One layer of sarking (item 12) was then stapled on the external side of the timber framing (item 4). The horizontal joint on the sarking was taped over using sealing tape (item 13) with the top sarking overlapping the bottom by 200 mm. The combustion chamber opening was capped with painted timber reveals (item 11) – which were screw fixed (item 26) to the timber framing (item 4). Attached to these timber strips were aluminium extrusions (item 8), that were screw fixed (item 26). These strips created the reveal of the opening with the aluminium extrusions (item 8) representing the perimeter of an aluminium framed window. Packers (item 11) were placed between the reveal (item 11) and the timber framing (item 4). The EPS panels (item 1) were screw (item 26) fixed over the top of the sarking (item 12). Panel to panel joints were butt joined with a bead of expandable foam (item 16) used at the centre of the thickness of the panel. Mid-width of the 2 m by 2 m opening, extending vertically to the top of the specimen, was a 10 mm wide vertical control joint which was applied with a backing rod (item 23) and sealant (item 17) on top flush with the render face. An AAC panel (item 2) was installed on the main wall, at approximately 1800 mm away from the window opening side wall. The panel was fixed in place using screws (item 32) To the face of the pre-rendered EPS panels (item 1) and AAC panel (item 2) was applied render, simultaneously with various reinforcing elements. These reinforcing elements were aluminium beads with a fiberglass mesh (item 22) and self-adhesive fiberglass mesh (item 21) – which was applied to panel to panel joints. The render system was then finished off with a membrane (item 19). Sealant (item 17) was also applied at the corner between the aluminium extrusions (item 8) and the finished render (item 19) at the 2 m by 2 m opening. The timber framing cavity (item 4) was filled with insulation (item 14) and was then clad with plasterboard (item 2), screw fixed at 300 mm centres using plasterboard screws (item 26).

2.2 Installation details

Table 6 lists the installation details for the test specimen.

Table 6 Installation details

Item	Detail
Start date for construction of the test specimen	23 June 2025
Completion date for construction of the test specimen	22 July 2025
External wall system constructed by	Representatives of Jensen Hughes
Symmetry	Asymmetrical: because: • The exposed side was a rendered EPS, while the unexposed side was regular plasterboard. It was confirmed that the system was exposed from the side that would normally face the outside of the building.

3.0 Test procedure

Table 7 details the test procedure for this reaction to fire test.

Table 7 Test procedure

Item	Detail	
Statement of compliance	The test was performed in general accordance with the requirements of BS 8414-2:2015+A1:2017 for a non-loadbearing external cladding system fixed to and supported by a structural steel frame.	
Variations	+ The ignition source of the test was constructed from Pinus Radiata instead of Pinus Silvestris. This variation is not considered to have affected the outcome of the test. + The specimen extended 1000 mm above the top of the combustion chamber, instead of the minimum 6000 mm outlined in section 5.3 of the standard. + The finished face of the wing wall was 450 mm away from the side of the combustion chamber opening, instead of the 260 ±100 mm outlined in section 5.4 of the standard. + Sections of the test specimen were constructed from substitute materials that were expected to display similar material performance under test conditions. The design was such that the external dimensions mimicked the geometry of a section of the as-built structure.	
Environmental conditions at the start of the test	Start of the test	17 °C
	Wind speed	0.2 – 0.5 m/s
Ignition source	Crib material	Softwood (radiata pine)
	Moisture content	14 %
	Density	472 kg/m^3
Sampling / specimen selection	The laboratory was not involved in sampling or selecting the test specimen for the reaction to fire test. The results obtained during the test only apply to the test samples as received and tested by Jensen Hughes.	
Test duration	60 minutes	
Instrumentation and equipment	The instrumentation was provided in accordance with BS 8414-2:2015 as follows: + All exposed and cavity temperatures were measured by mineral insulated metal sheathed (MIMS) Type K thermocouples with an overall diameter of 1.5 mm with the measuring junction insulated from the sheath. + Exposed temperatures were measured by 100 mm × 100 mm × 0.7 mm plate thermometers with mineral insulated metal sheathed (MIMS) Type K thermocouples with an overall diameter of 1.5 mm with the measuring junction electrically insulated from the sheath. The thermocouple hot junction was fixed to the geometric centre of the plate by a small steel strip made from the same material-as the plate. The plate thermometers included 97 mm × 97 mm × 10 mm inorganic insulation pads. Before the first use of the plate thermometers, they were aged by being exposed to heat in a fire-resistance test furnace for 90 minutes under the standard temperature/ time curve. + The thermocouple positions are shown in Figure 23 in Appendix C. + The wind speed was measured by an anemometer in front of the combustion chamber, 1000 mm forward from the centre line of the combustion chamber. + Timber crib moisture was measured by a moisture meter.	

4.0 Test measurements and results

Table 8 shows the peak temperatures the test specimen achieved as listed in BS 8414- 2:2015+A1:2017.

The temperature measurements for the test specimen are included in Appendix C.

Table 9 in Appendix B includes observations of any significant behaviour of the specimen and details the occurrence of the various performance criteria specified in BS 8414-2:2015+A1:2017.

Video recordings were also taken of the test. A copy of the video recording is available upon request from the test sponsor. The video should be viewed in conjunction with the content of this report.

Photographs of the specimen are included in Appendix D.

Table 8 Test results

Parameter	Results
t_s, start time	2 minutes 10 seconds after ignition of crib
Peak temperature/time at Level 1, 50 mm external	1002 °C at 18 minutes 21 seconds after t_s

5.0 Application of test results

5.1 Test limitations

The results of these fire tests may be used to directly assess fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all fire conditions.

These results only relate to the behaviour of the specimen of the element of construction under the particular conditions of the test. They are not intended to be the sole criteria for assessing the potential fire performance of the element in use, and they do not necessarily reflect the actual behaviour in fires.

5.2 Variations from the tested specimen

This report details methods of construction, the test conditions and the results obtained when the specific element of construction described here was tested following the procedure outlined in BS 8414-2:2015+A1:2017.

Any significant variation with respect to size, construction details, loads, stresses, edge or end conditions, other than that allowed under the field of direct application in the relevant test method, is not covered by this report.

5.3 Uncertainty of measurements

Because of the nature of reaction to fire testing and the consequent difficulty in quantifying the uncertainty of measurements obtained from a reaction to fire test, it is not possible to provide a stated degree of accuracy of result.

Appendix A Drawings of test assembly

The drawings of the test assembly in Figure 1 to Figure 12 were provided by the test sponsor and marked up by Jensen Hughes.

The leaders in the drawings represent the items listed in section 2.1. All measurements – unless indicated – are in millimetres.

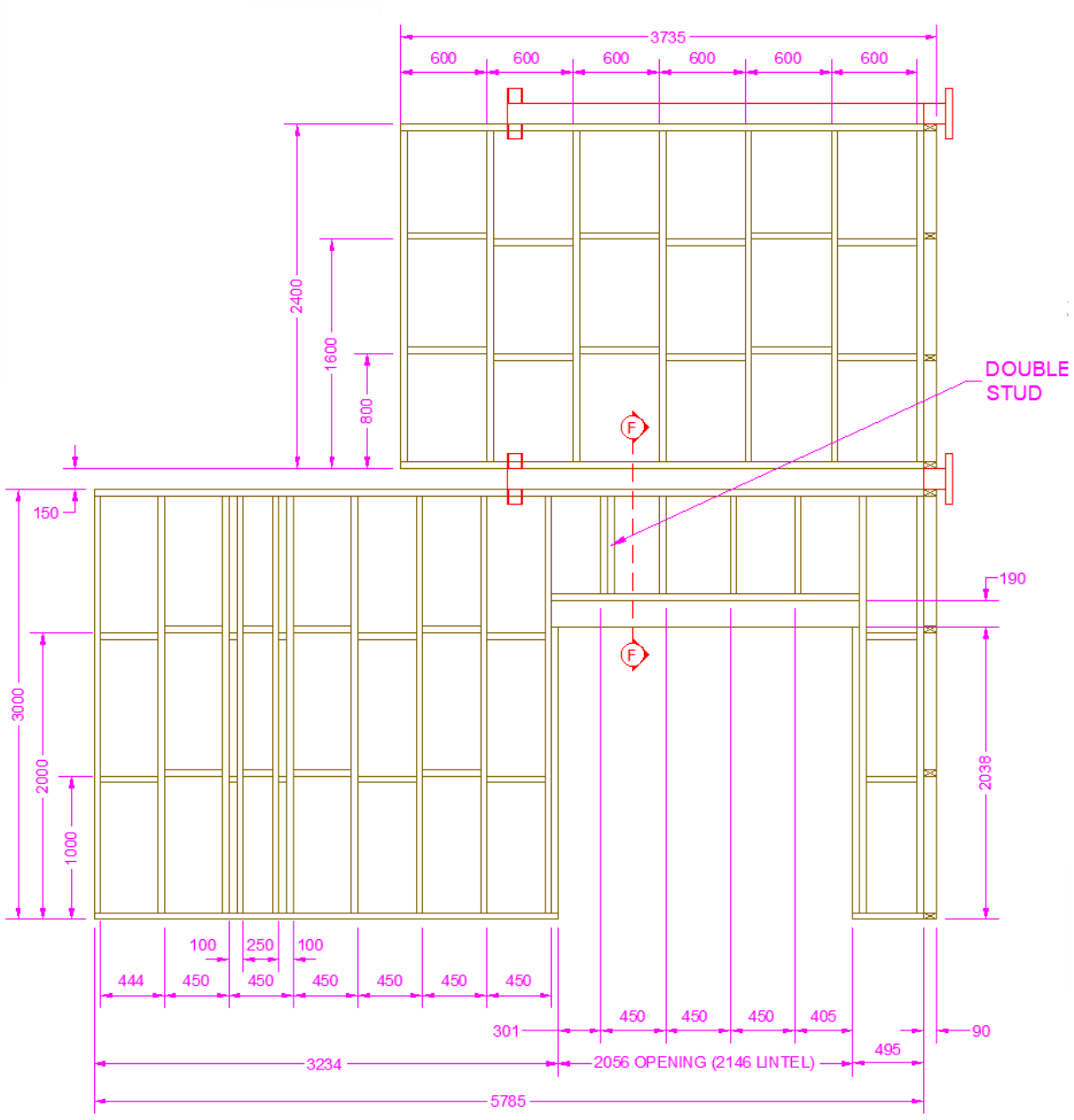

Figure 1 Timber framing, main wall

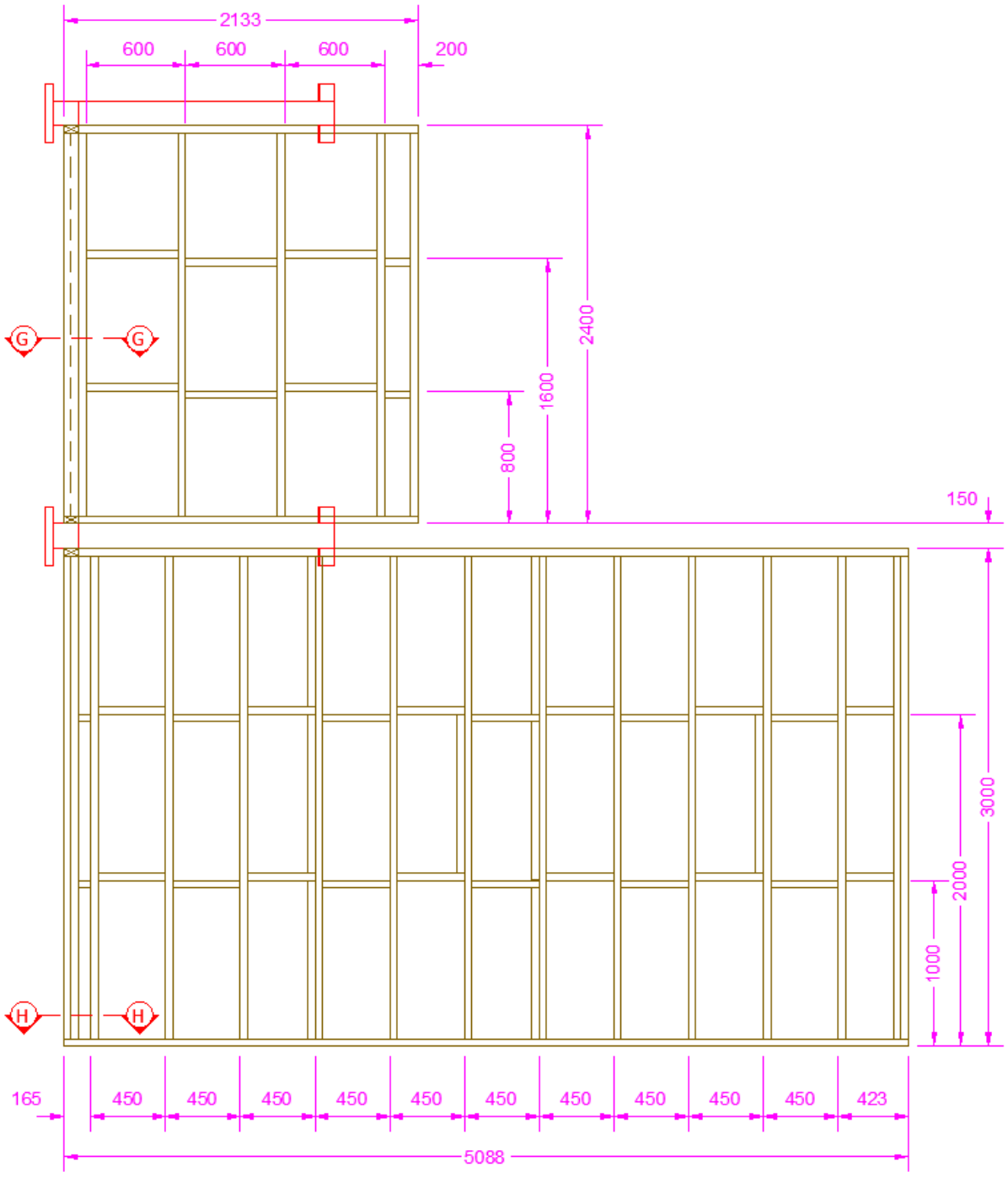

Figure 2 Timber framing, wing wall

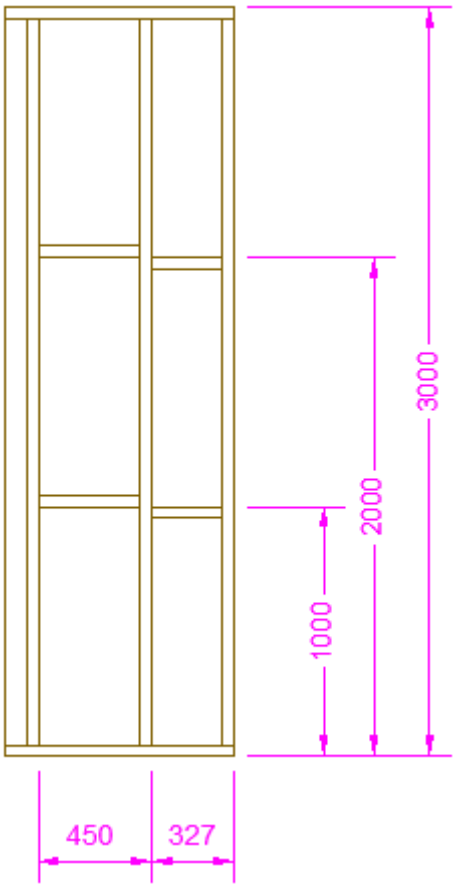

Figure 3 *Timber framing, return front wall*

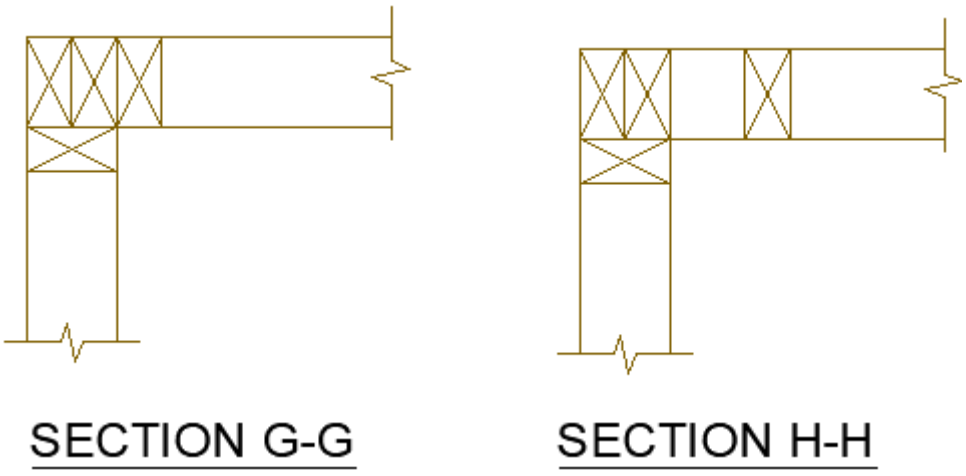

Figure 4 *Timber framing - cross section F-F and G-G, main wall*

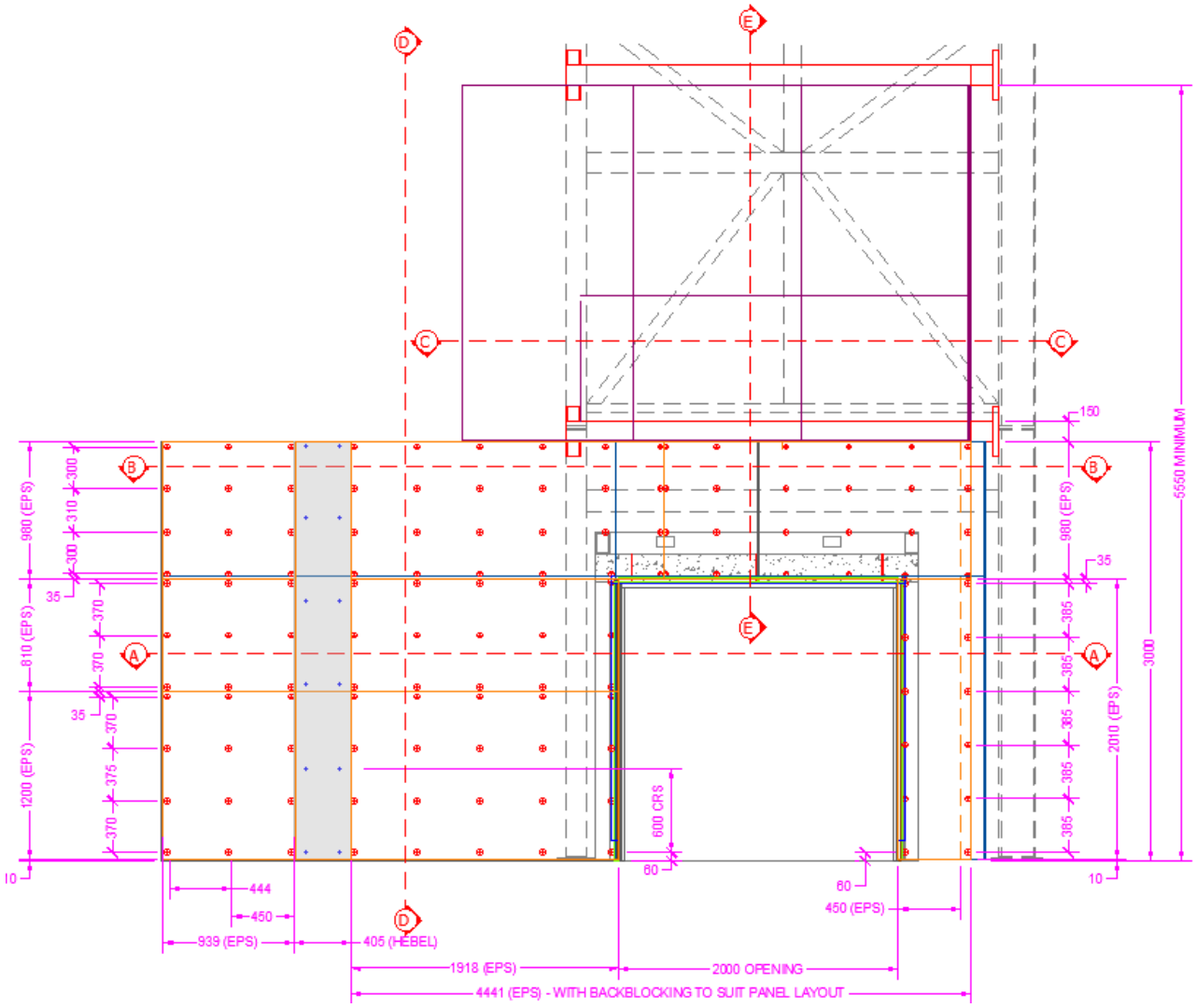

Figure 5 Panel layout, main wall

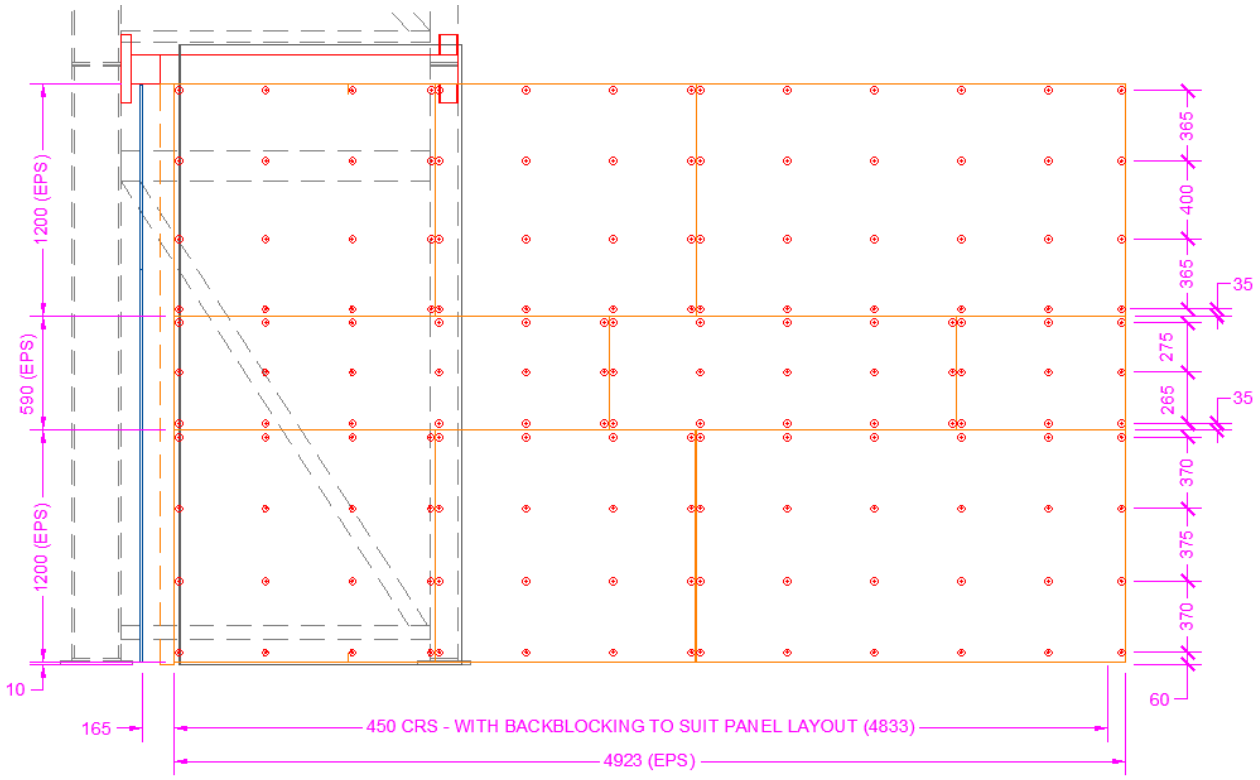

Figure 6 Panel layout, wing wall

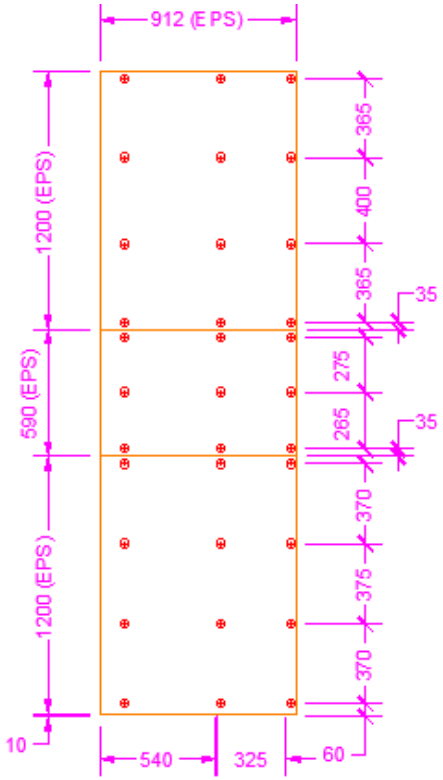

Figure 7 Panel layout, return front wall

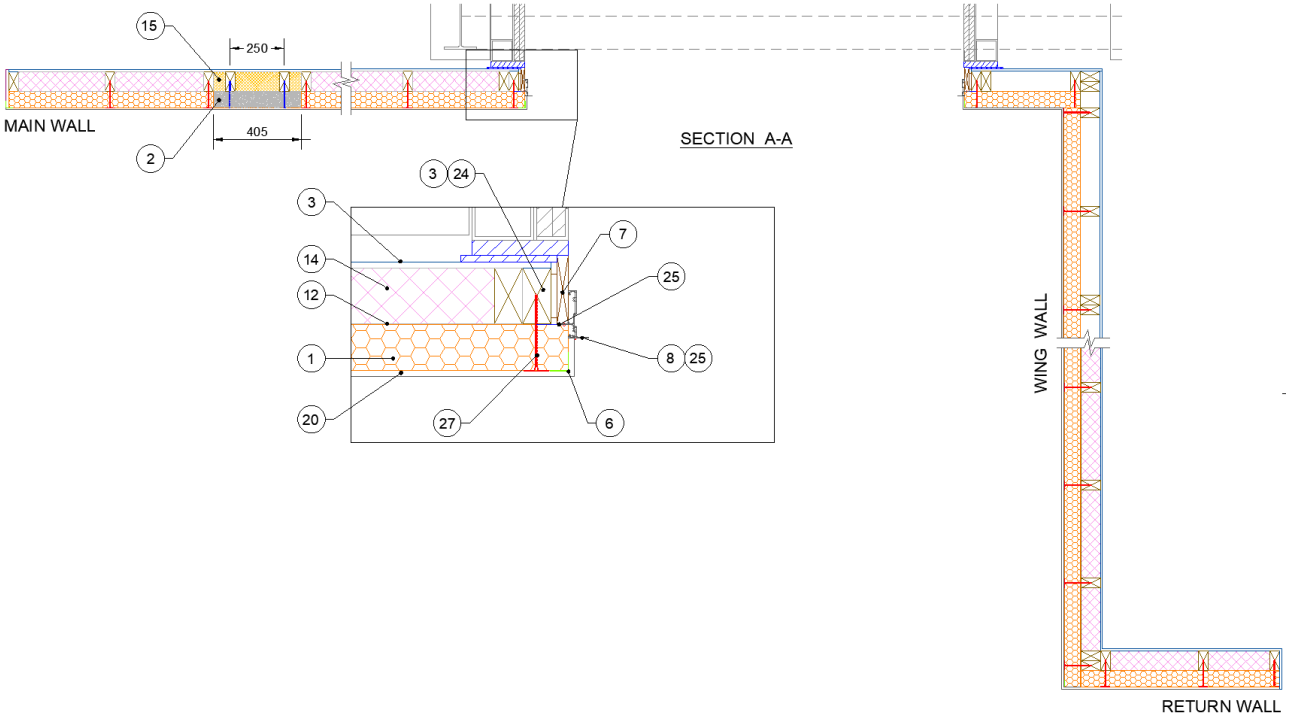

Figure 8 Overall top view, Section A-A

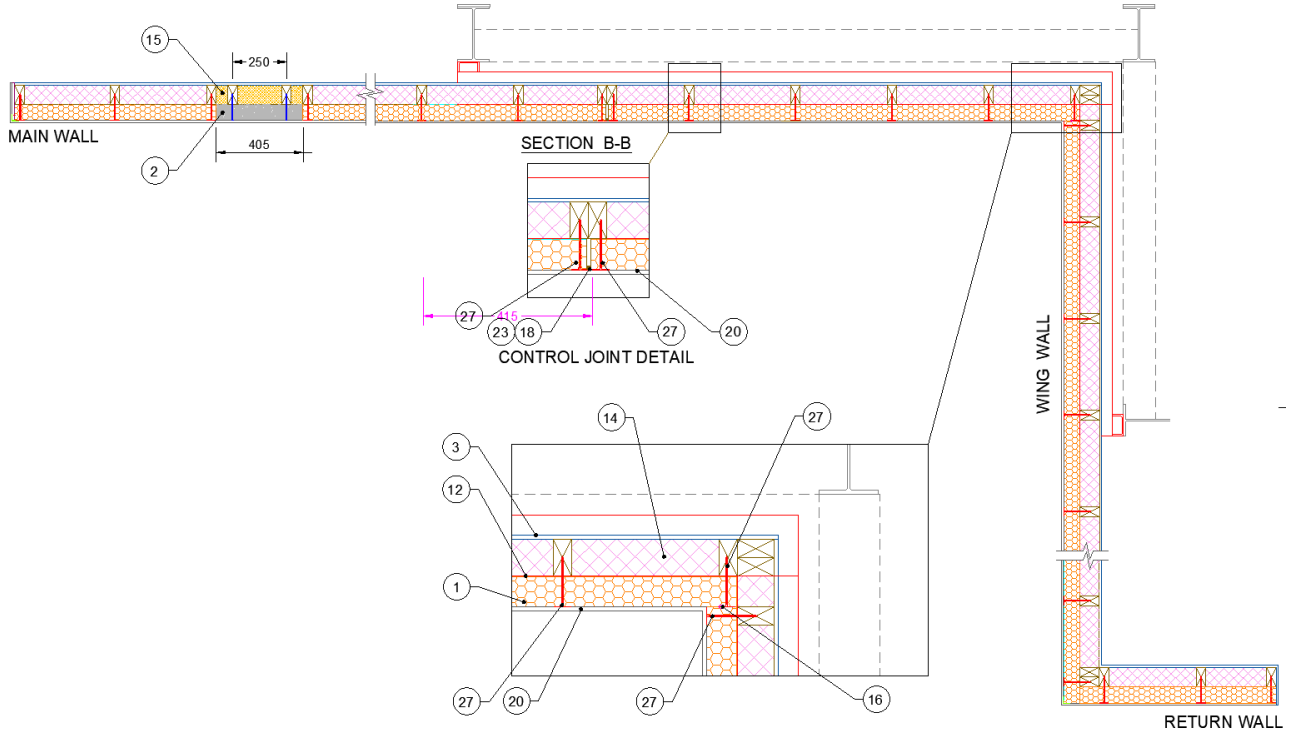

Figure 9 Overall top view, Section B-B

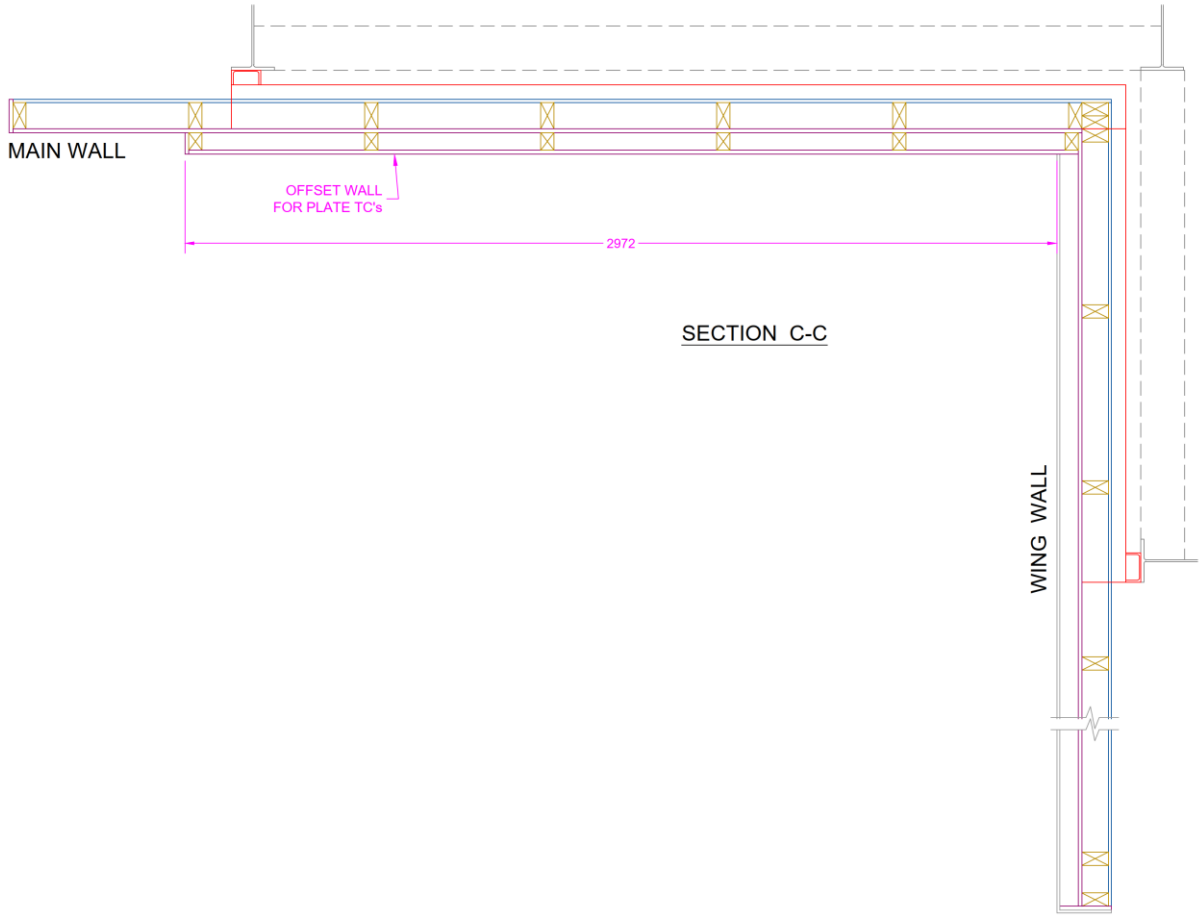

Figure 10 Overall top view, Section C-C

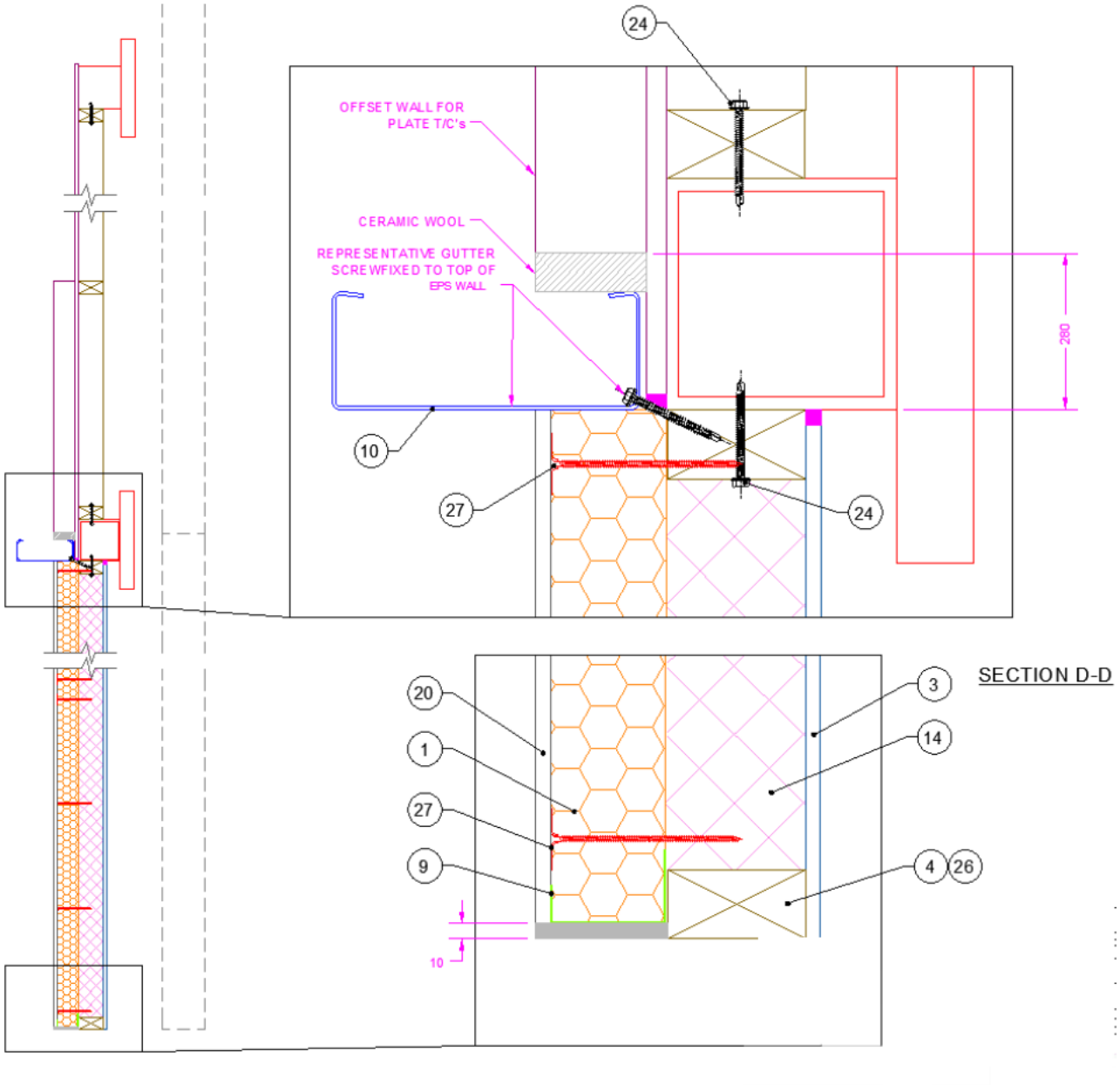

Figure 11 *Overall side view, Section D-D*

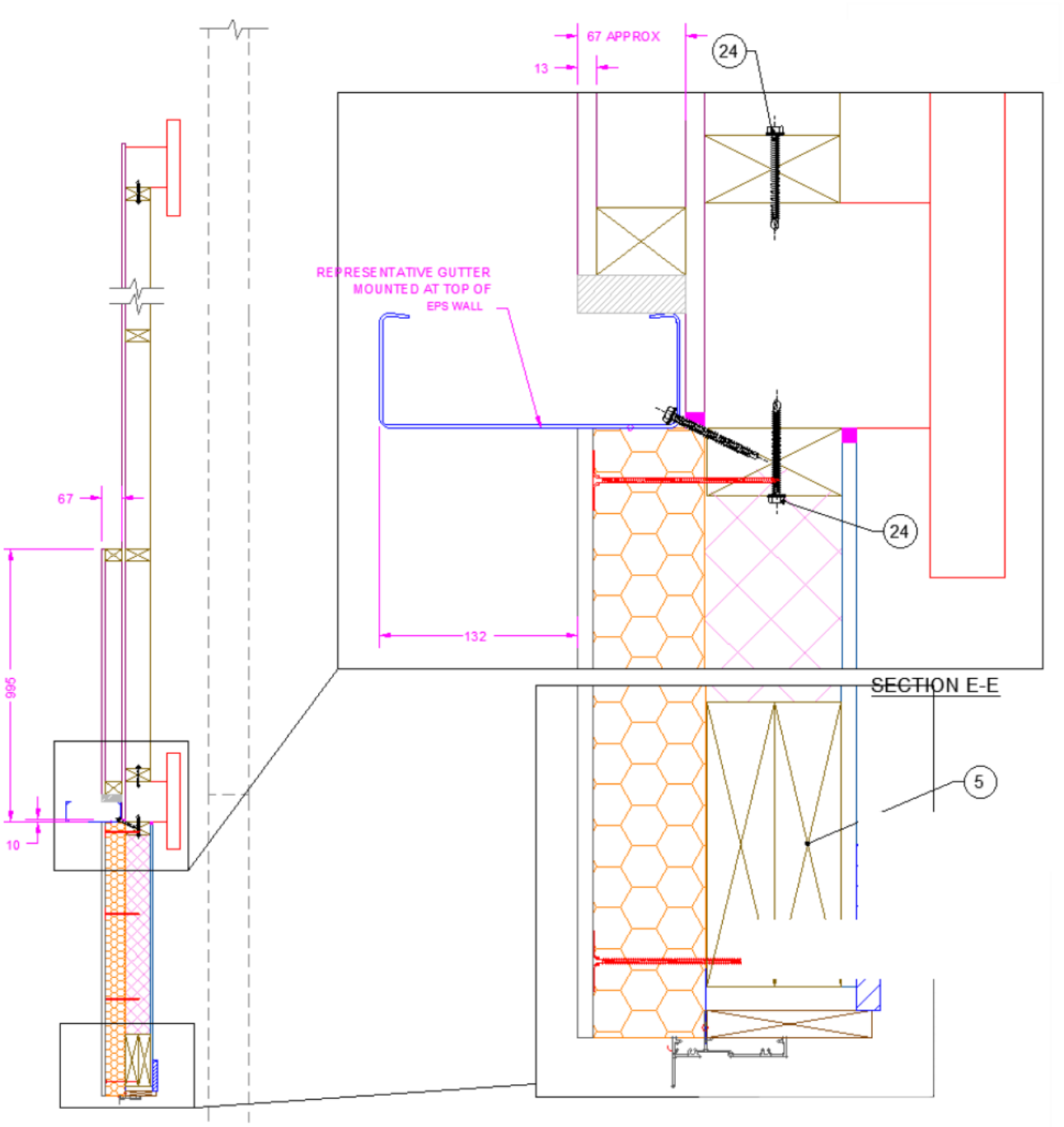

Figure 12 Overall side view, Section E-E

Appendix B Test observations

B.1 Visual observation

Table 9 shows the observations of any significant behaviour of the specimen during the test.

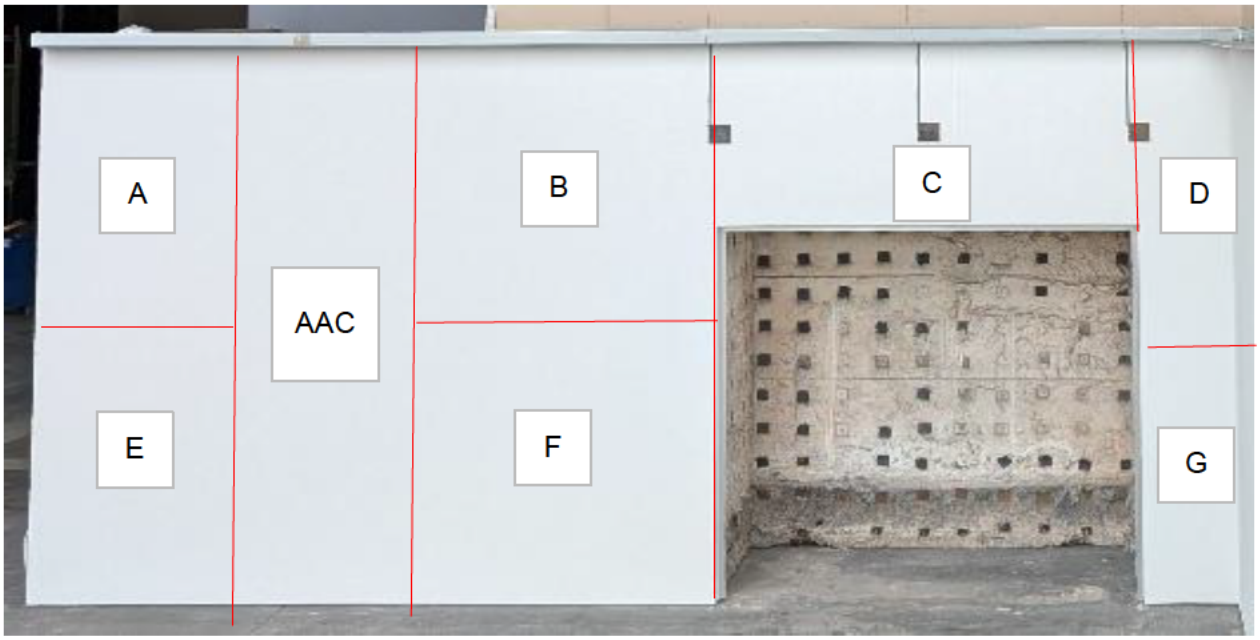

Figure 13 Main wall region designation

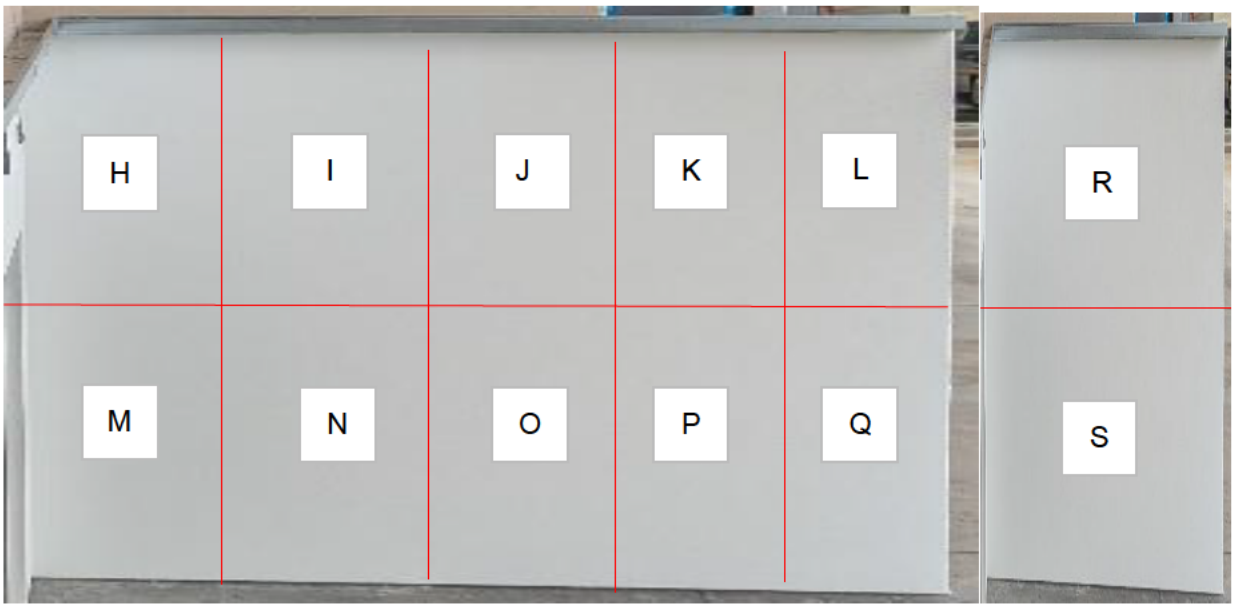

Figure 14 Wing wall and return wall region designation

Table 9 Test observations

Time		Observation
0	00	The crib was ignited, and the test was started.
0	44	Smoke started to escape from the combustion chamber.
1	42	The flames started to flow out of the chamber.
2	05	Region C started to discolour.
2	17	The render in region C started to flake off.
2	47	The flames had reached the thermocouple tree.
3	10	Smoke started to escape from the south flashing of the combustion chamber.
3	16	The area next to the combustion chamber in region D started to smoke.
3	41	The render in region C started to flame independently.
4	14	The gutter above region C started to discolour.
4	36	The gutter above region C started to deform.
4	52	The gutter above region C started to deflect forward.
5	25	Smoke started to escape from the unexposed side above the combustion chamber.
5	47	Flaming debris started to eject from region C.
6	04	Flaming debris started to pool in front of the combustion chamber, lasting for more than 20 seconds.
6	48	The front face of region C started to open up.
8	20	The face of the panel in region H and M started to deform.
8	40	Smoke started to escape from the top edge of the panels in region H.
9	47	The flames started to travel along the gutter line above region B.
10	00	The face of region H started to discolour.
10	48	Flames started to spread over the face of region D.
11	06	A piece of render sheet fell from region C.
12	00	The discolouration in region H had spread to region I and M.
12	51	Flames started to spread across the face of region B.
13	32	The panel face in region H, I and M was flaming independently.
14	25	The face of region D was fully flaming, extending down to region G.
14	32	The panel face started to crack in region H.
14	43	The render face started to peel off region H, I and M.
14	57	The flames started to spread down to region F.
15	26	The flames had spread towards region J.
15	27	The timber framing was visible in region C.
16	00	The panel face in region N started to flame independently.
17	14	Flames started to escape from the unexposed side of region B.
18	13	The face in region H had delaminated, revealing the burning timber framing behind it.
18	52	The insulation in region H was partially consumed and partially dislodged from the cavity.
19	16	The flames had reached to top corner of region O.
19	50	The flaming studs behind region M, I and J were exposed.

Time		Observation
20	50	The flames had spread along the gutter in region K.
22	00	The facing in region I, J and K had delaminated, revealing the flaming timber framing behind.
22	40	The flames had got through to the unexposed side in region C.
22	43	The flames had reached the AAC.
22	50	The flames had reached the face in region K.
23	40	The flames had reached past region L and Q.
24	36	The timber framing behind region N, O and P was flaming intensely.
25	53	The panel face in region M, N, O and P had fallen off.
26	09	The panels in region B had been fully consumed and partially consumed in region F.
26	34	The flames had extended past the gutter in region L.
29	00	Flames were escaping from behind the insulation batts.
30	00	The crib was removed.
30	30	Region L and Q had continued flaming independently.
32	12	The panel in region L and Q started to degrade.
32	40	The top of region R had discoloured.
33	55	The inner edge of region R and S had discoloured.
34	20	The face of region R and S was flaming independently.
36	06	The facing in region R and S had delaminated.
38	30	Significant flaming escaped from region L.
41	00	The panel in region R and S had fallen away.
53	35	The timber framing of the blanking wall above the combustion chamber was flaming.
54	16	The lintel above the combustion chamber started to collapse.
60	00	The test was ended and the wall assembly was sprayed.

B.2 Post-test observations

External wall system

All the EPS and insulation to the right of the AAC was consumed during the test, with most of the renders fallen off the wall. The AAC , EPS and insulation on the left side of the AAC panel was untouched.

Aside from the framing behind the AAC and to left of the AAC, all other timber framing was fully charred.

Aside from the plasterboard behind the AAC and to left of the AAC, all other plasterboard had either collapsed or consumed.

Appendix C Test data

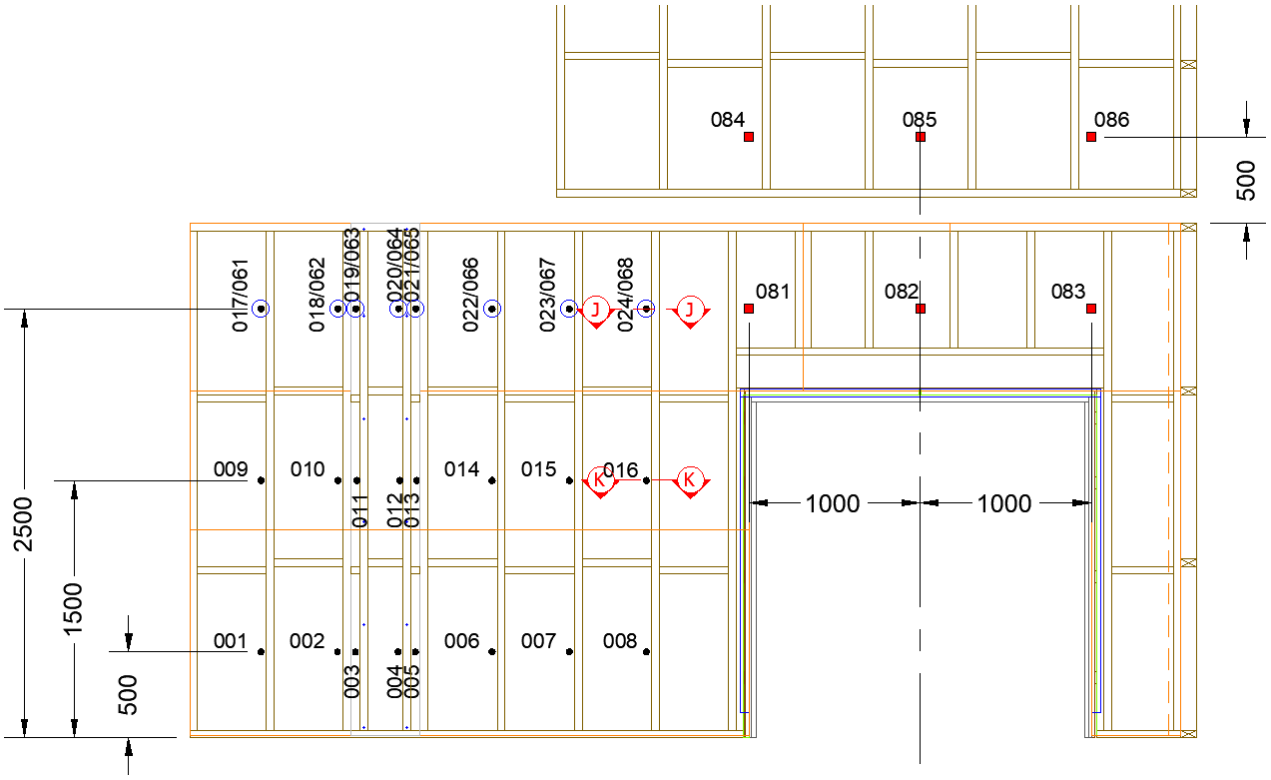

Figure 15 Main wall thermocouple locations, internal thermocouples and plate thermometers

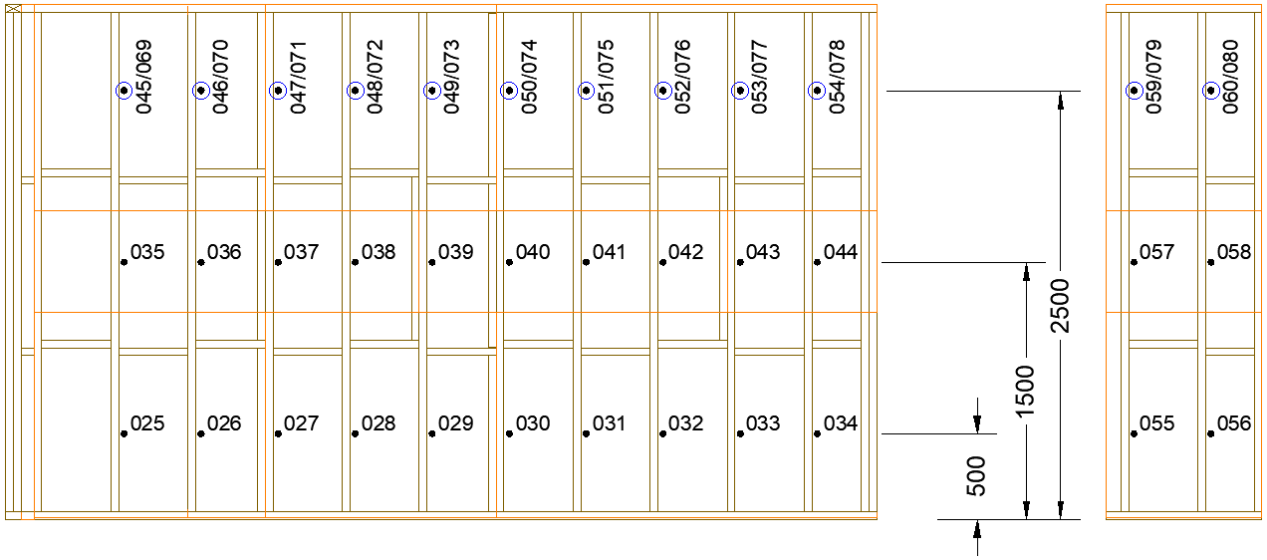

Figure 16 Wing and return wall thermocouple locations, internal thermocouples

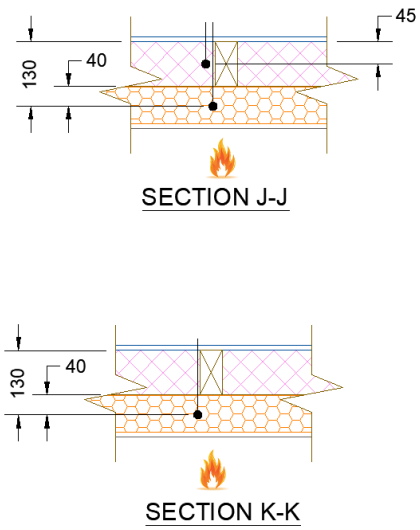

Figure 17 Cross sectional view of thermocouple locations

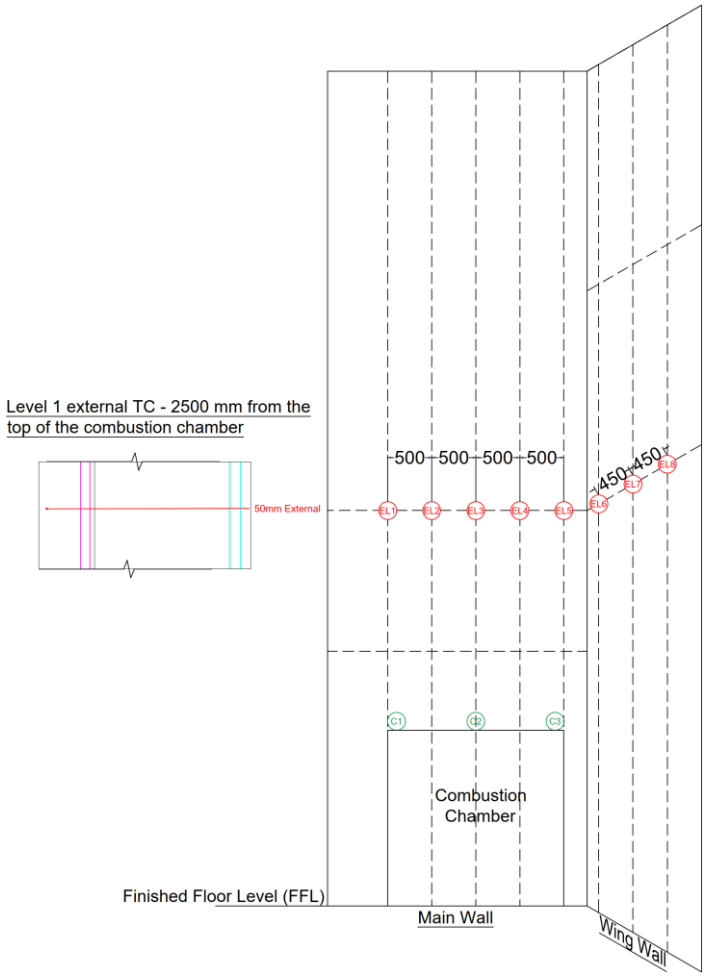

Figure 18 Thermocouple locations, external thermocouples and combustion chamber

C.1 Specimen temperatures

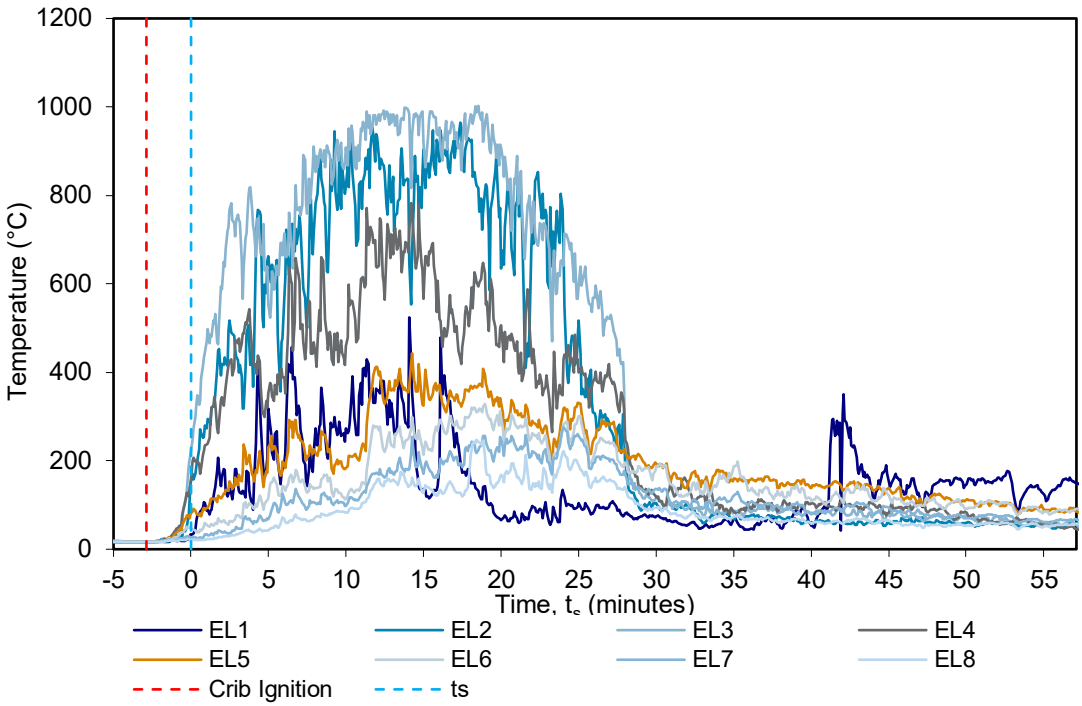

Figure 19 Level 1, external – temperature vs time

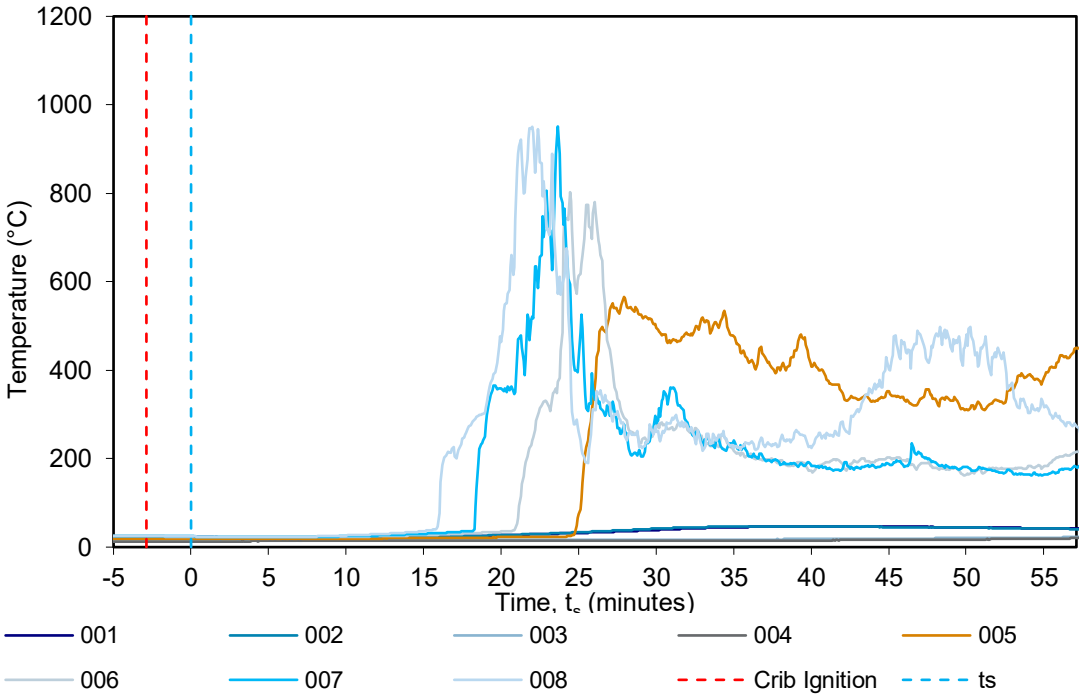

Figure 20 MIMS, main wall 500 mm from the floor – temperature vs time

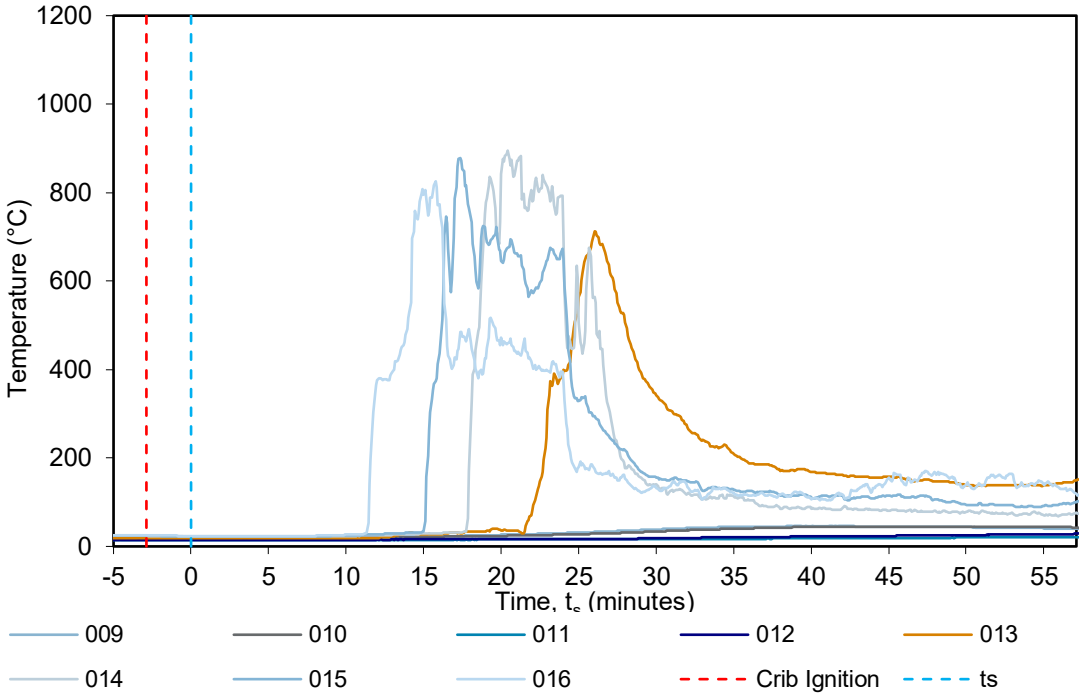

Figure 21 *MIMS, main wall 1500 mm from the floor – temperature vs time*

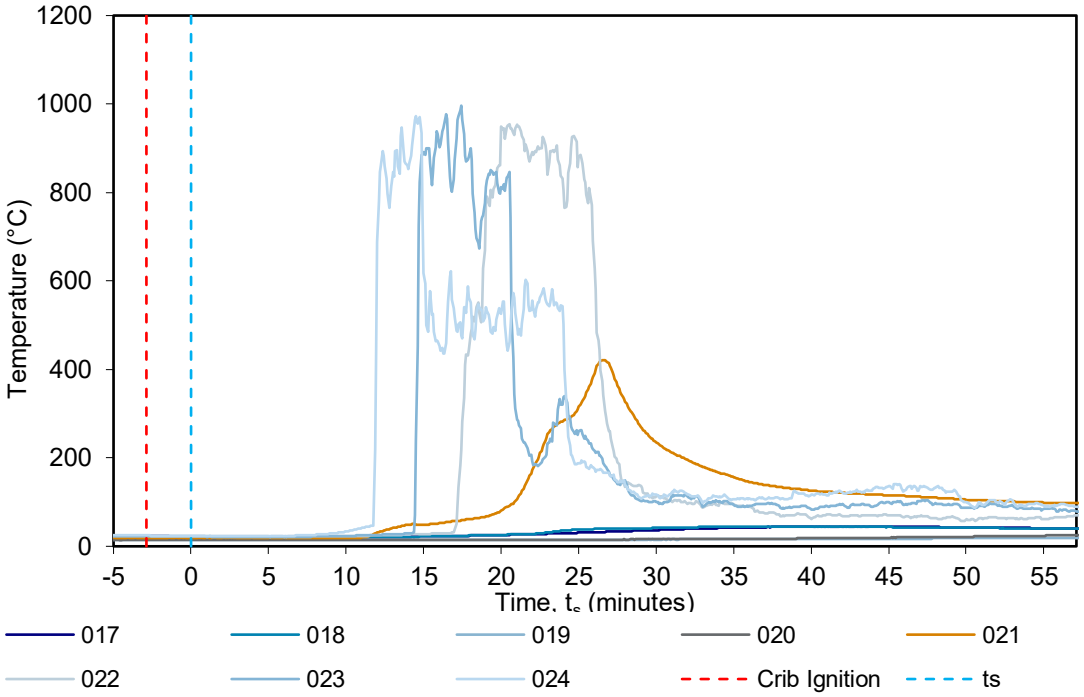

Figure 22 *MIMS, main wall 2500 mm from the floor – temperature vs time*

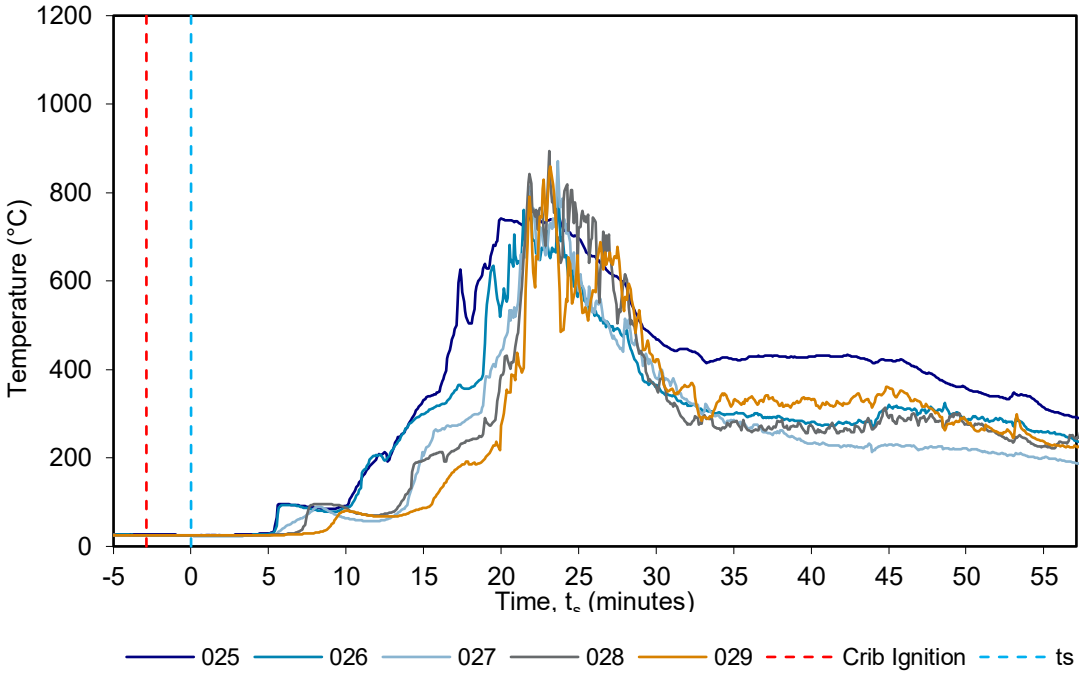

Figure 23 *MIMS, wing wall 500 mm from the floor – temperature vs time*

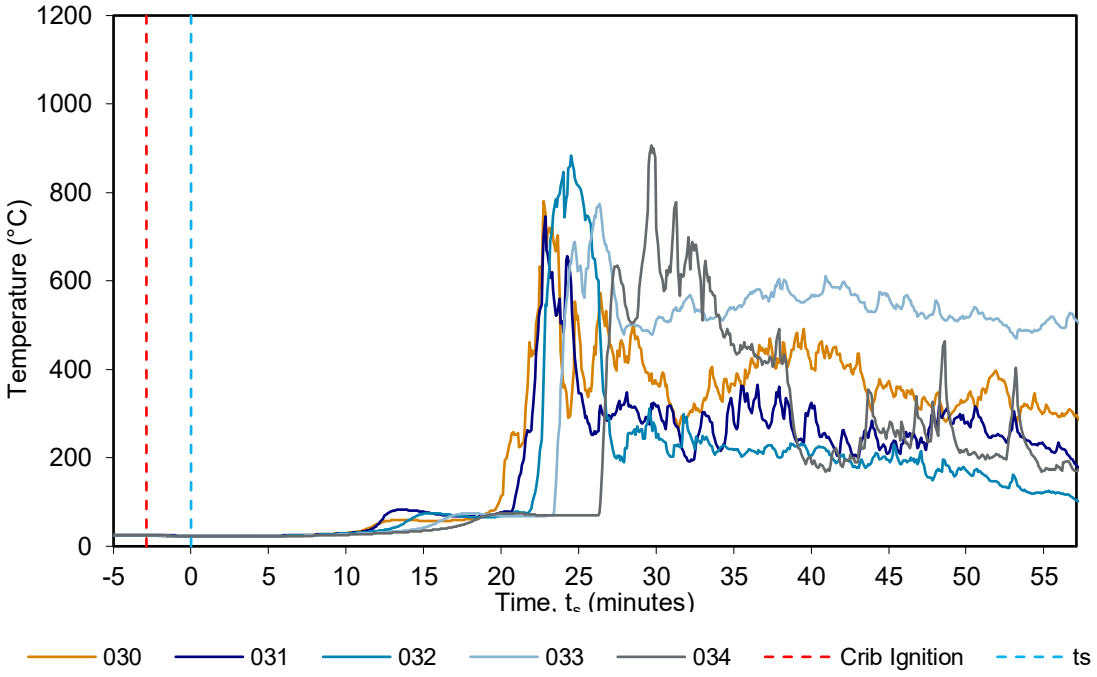

Figure 24 *MIMS, wing wall 500 mm from the floor – temperature vs time*

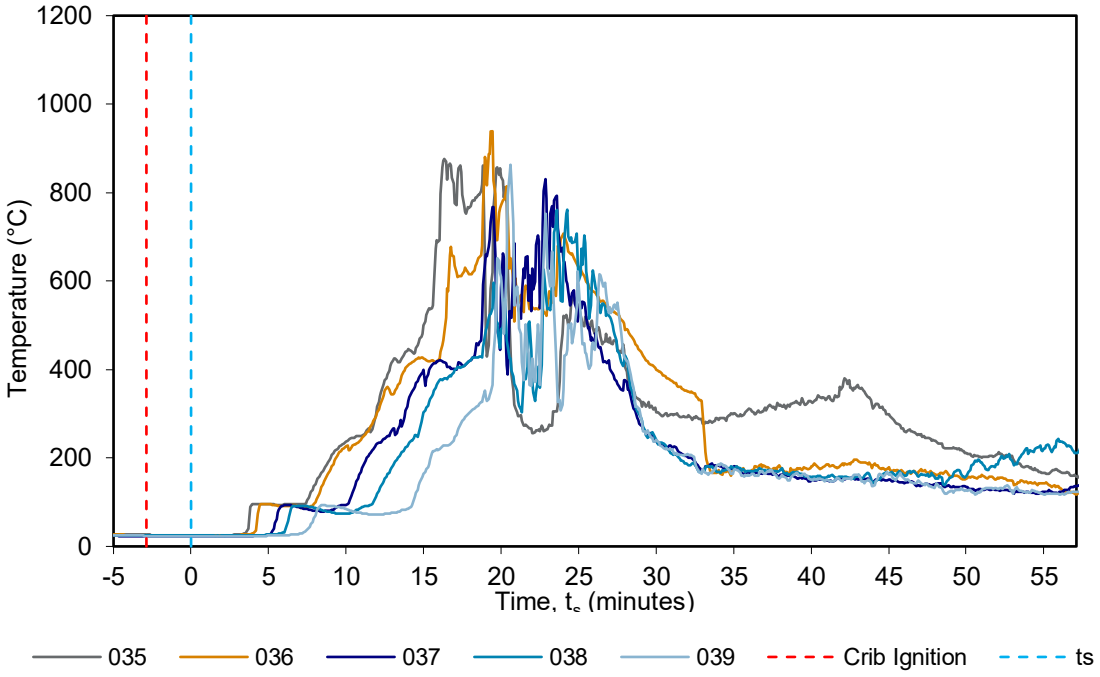

Figure 25 *MIMS, wing wall 1500 mm from the floor – temperature vs time*

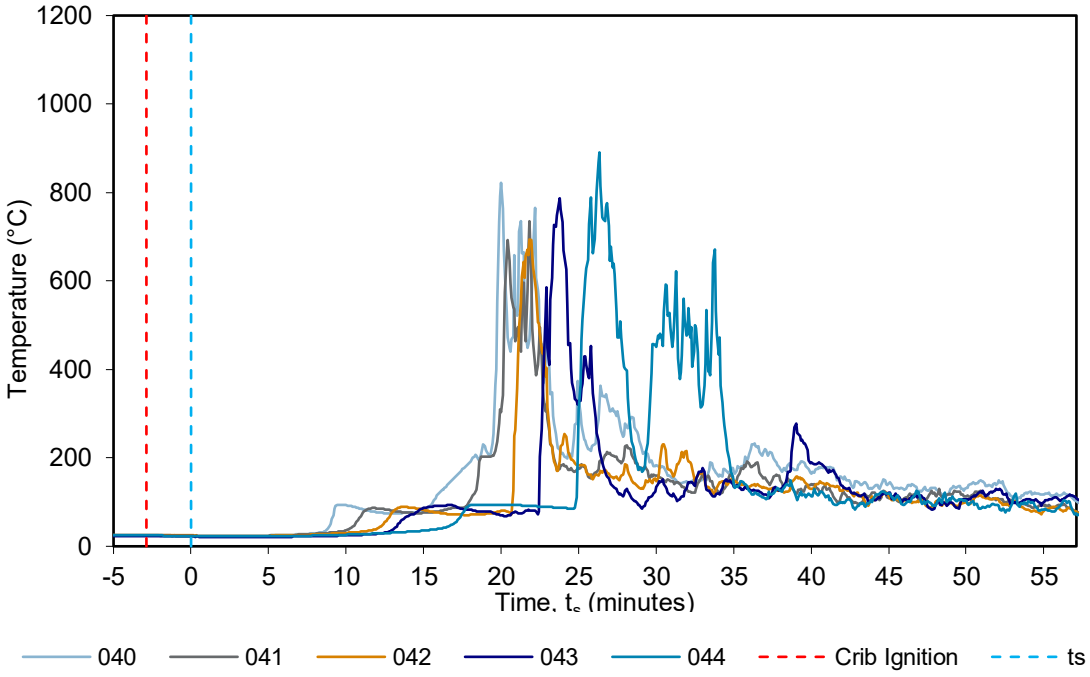

Figure 26 *MIMS, wing wall 1500 mm from the floor – temperature vs time*

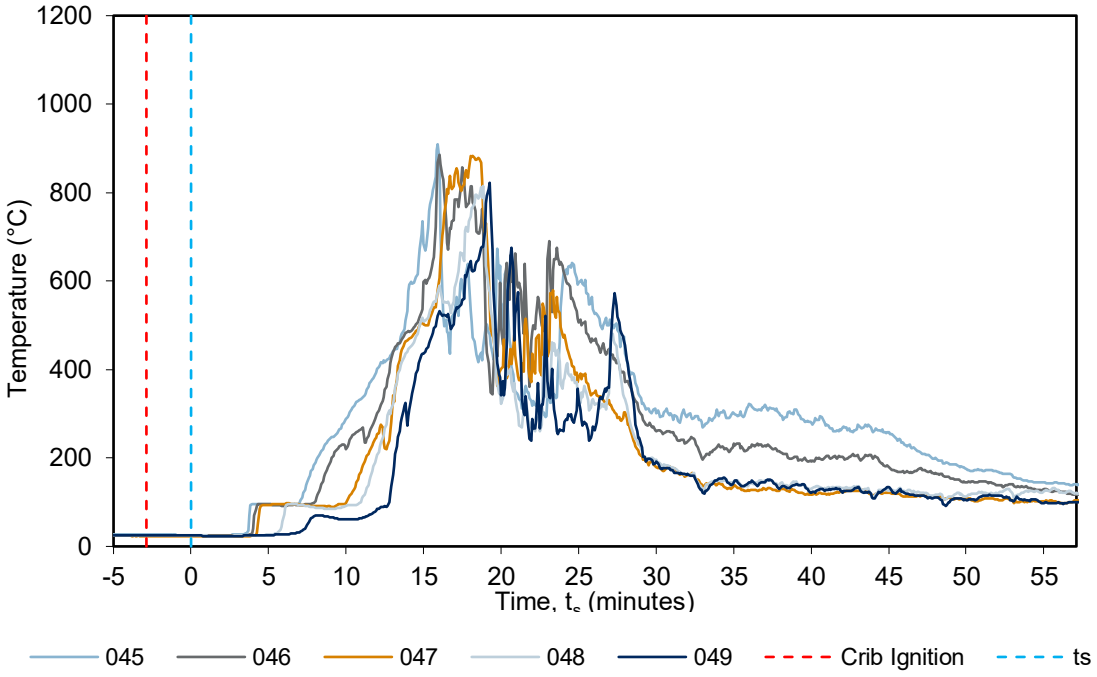

Figure 27 *MIMS, wing wall 2500 mm from the floor – temperature vs time*

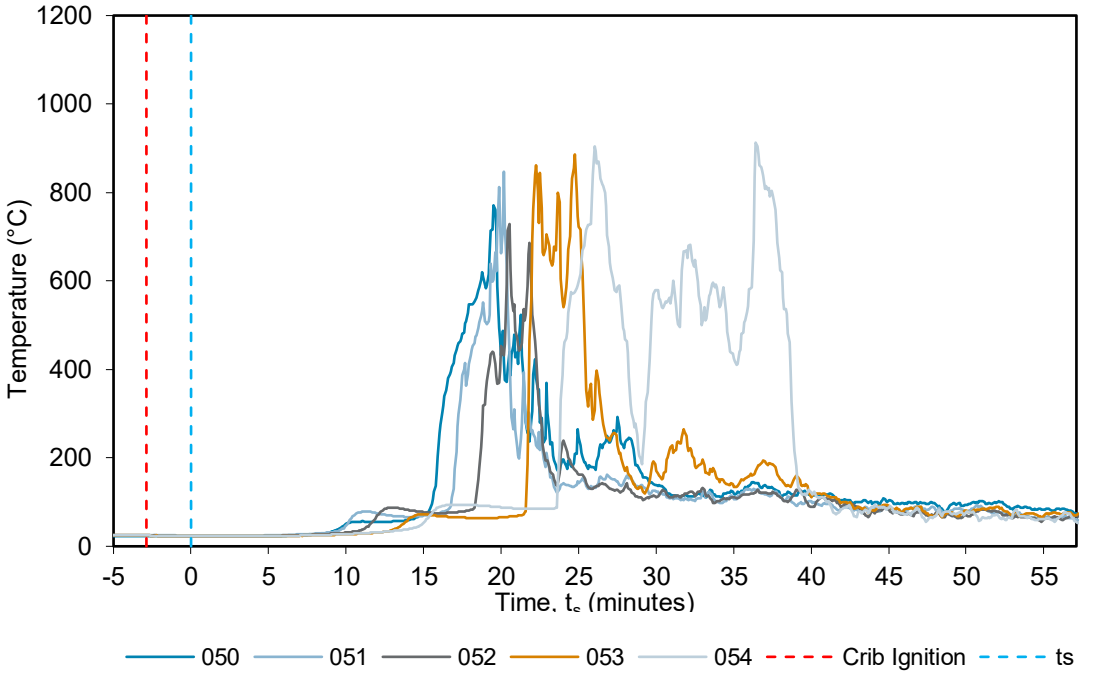

Figure 28 *MIMS, wing wall 2500 mm from the floor – temperature vs time*

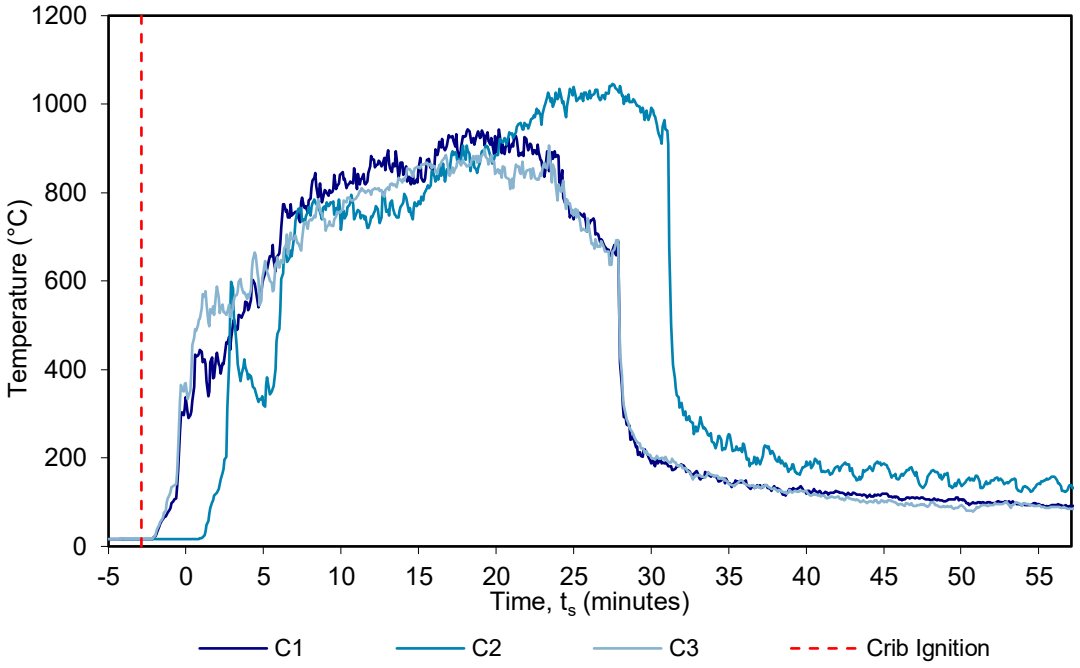

Figure 29 Combustion chamber – temperature vs time

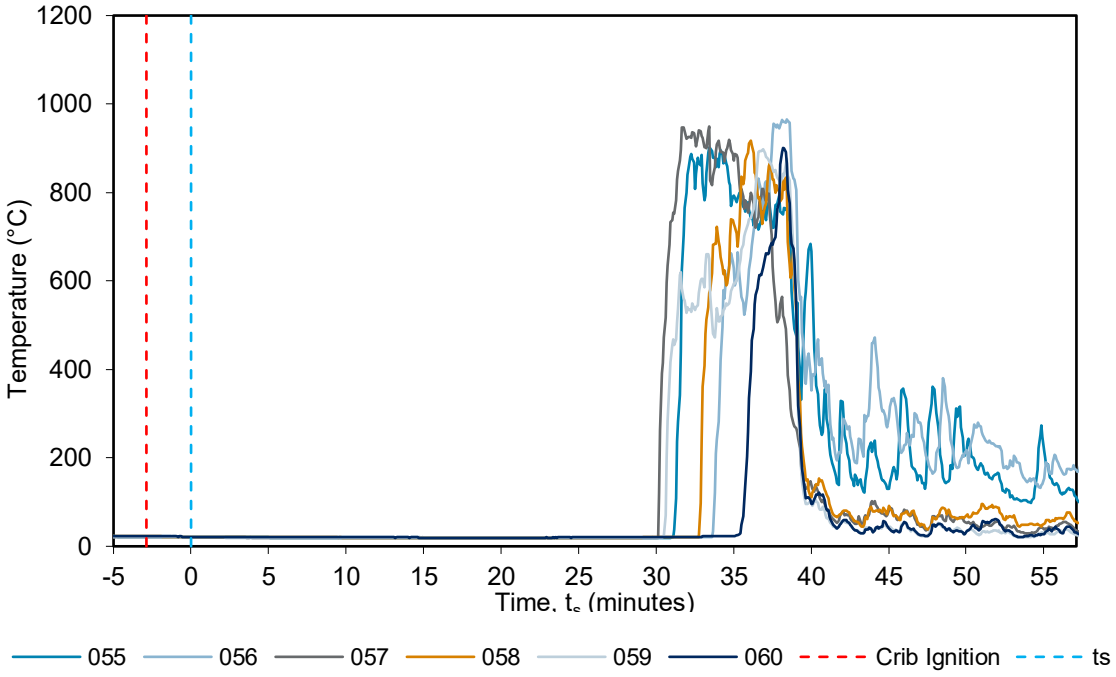

Figure 30 MIMS, return wall – temperature vs time

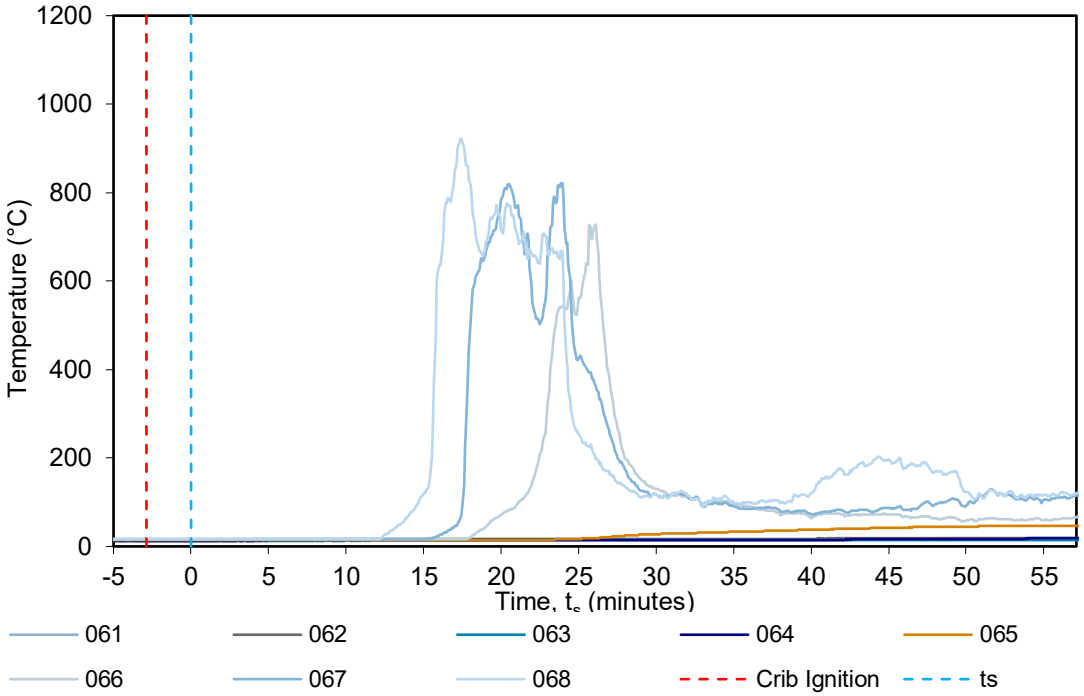

Figure 31 *Stud MIMS, main wall – temperature vs time*

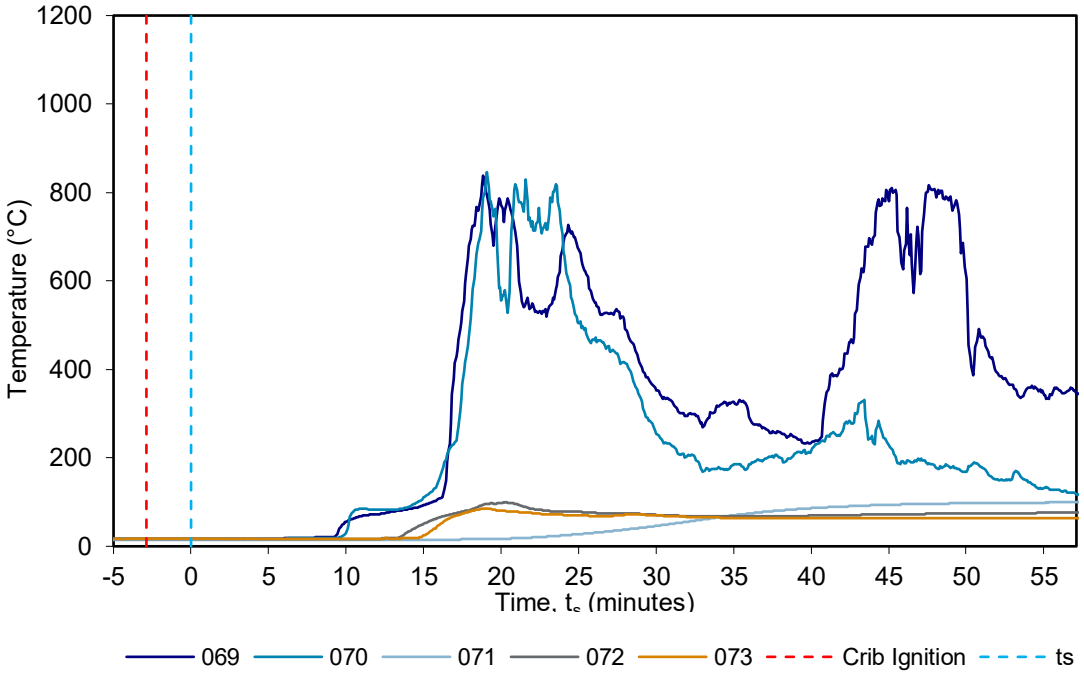

Figure 32 *Stud MIMS, wing wall – temperature vs time*

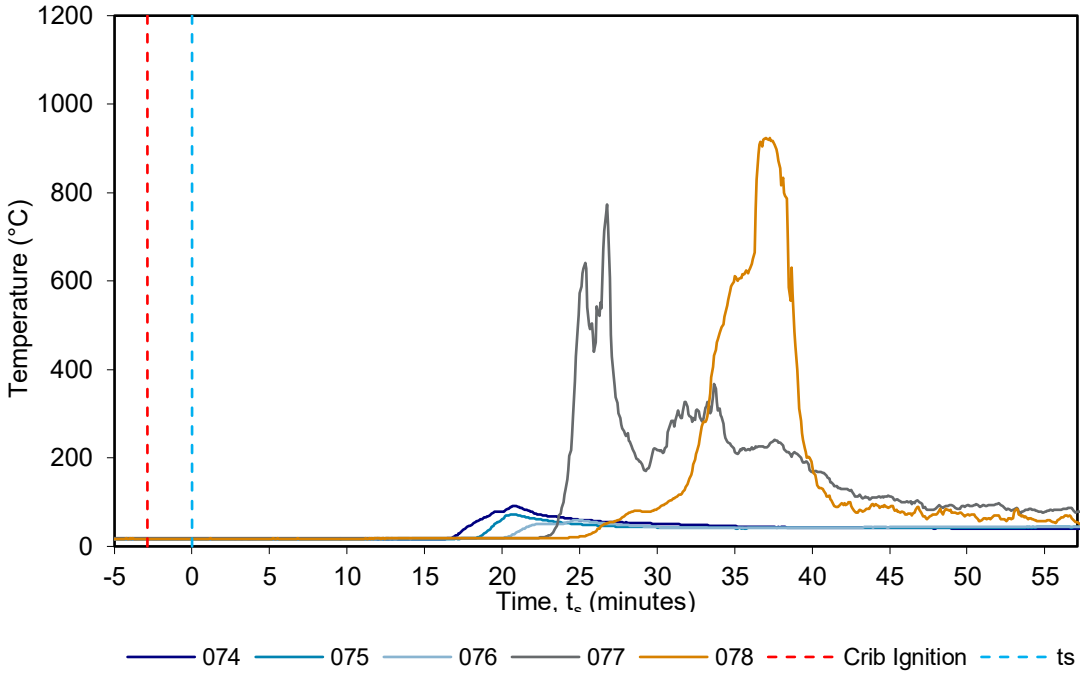

Figure 33 Stud MIMS, wing wall – temperature vs time

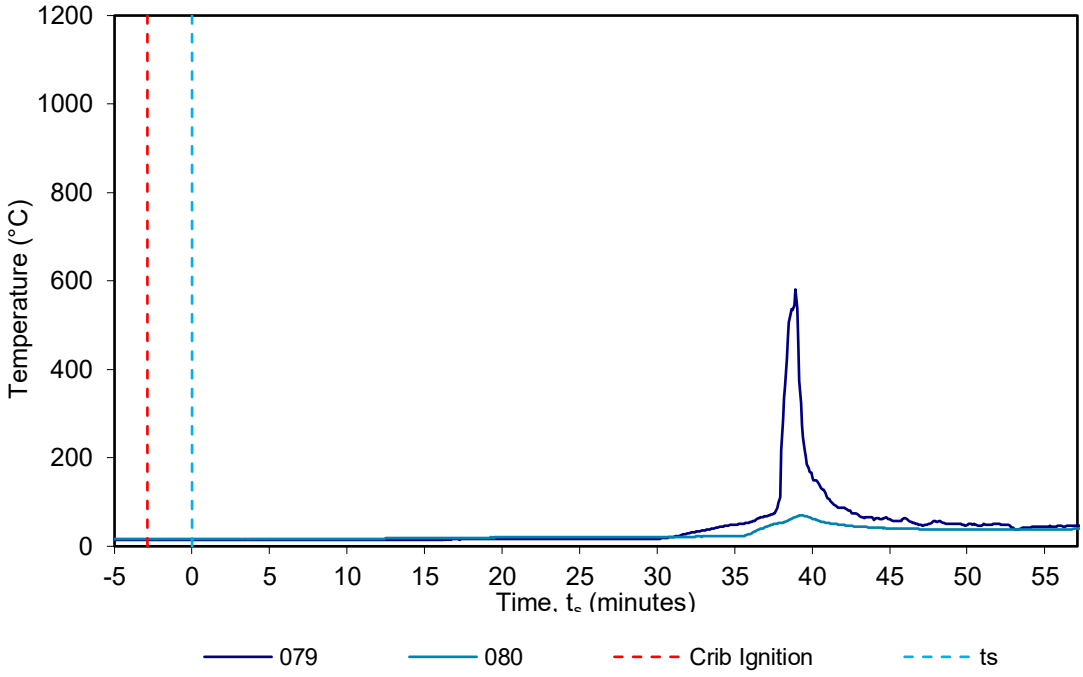

Figure 34 Stud MIMS, return wall – temperature vs time

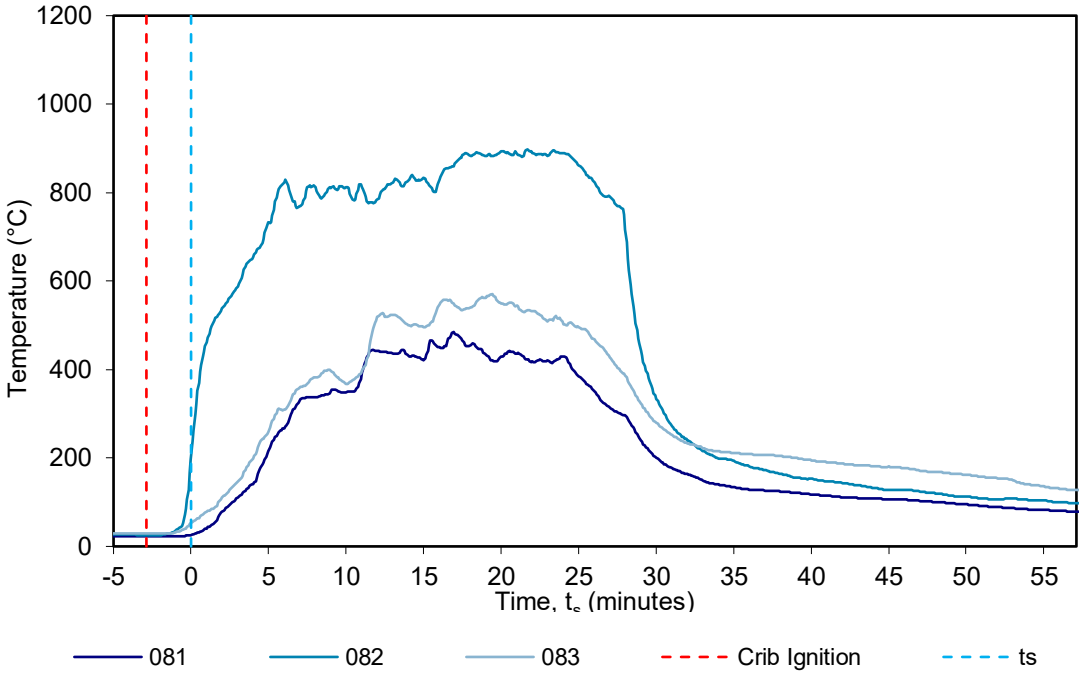

Figure 35 *Plate thermometer – temperature vs time*

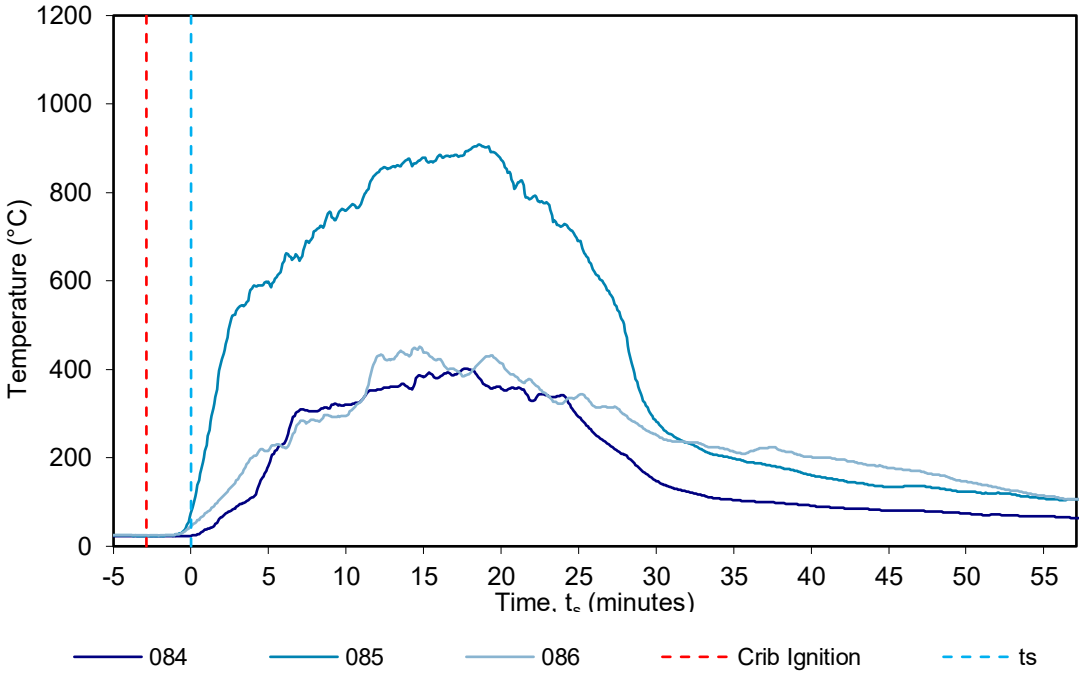

Figure 36 *Plate thermometer – temperature vs time*

Appendix D Photographs

Figure 37 The wall system before the start of the test

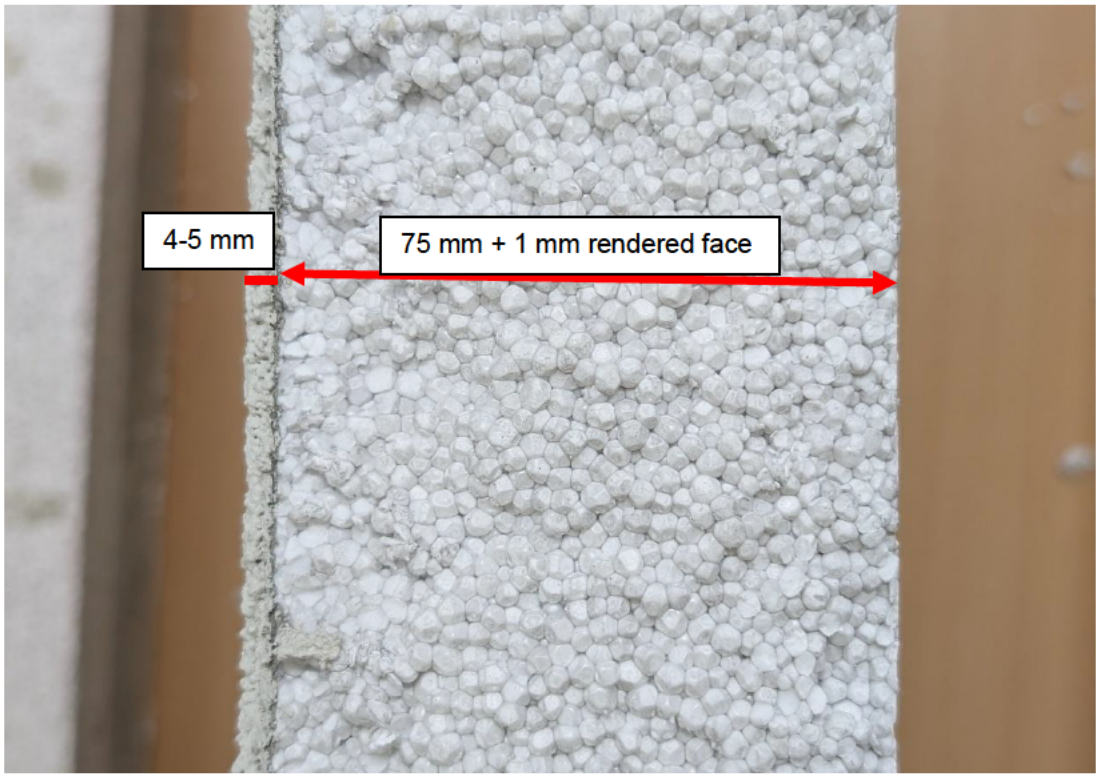

Figure 38 Cross section of the panel and thicknesses

Figure 39 The wall system during the test – 4 minutes 54 seconds after crib ignition

Figure 40 The wall system during the test – 10 minutes 54 seconds after crib ignition

Figure 41 The wall system during the test – 14 minutes 55 seconds after crib ignition

Figure 42 The wall system during the test – 19 minutes 55 seconds after crib ignition

Figure 43 The wall system during the test – 23 minutes 54 seconds after crib ignition

Figure 44 The wall system during the test – 28 minutes 54 seconds after crib ignition

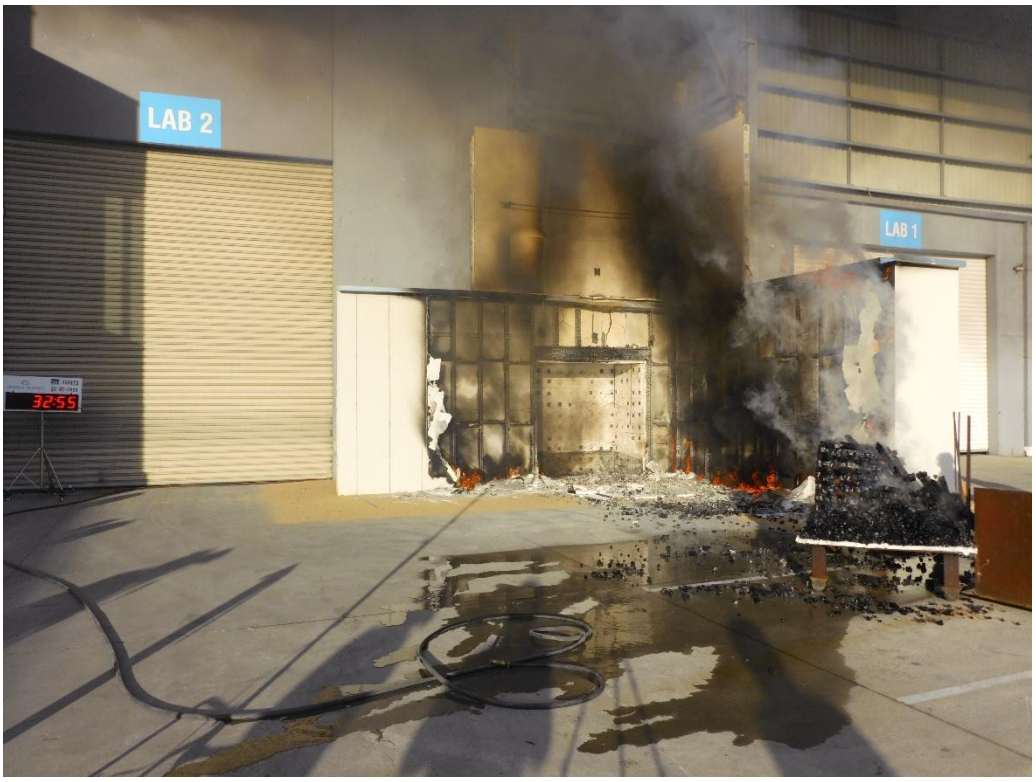

Figure 45 The wall system during the test – after removal of the crib, 32 minutes 55 seconds after ignition of crib

Figure 46 The wall system during the test – 36 minutes 55 seconds after crib ignition

Figure 47 The wall system during the test – 40 minutes 56 seconds after crib ignition

Figure 48 The wall system during the test – 44 minutes 55 seconds after crib ignition

Figure 49 The wall system during the test – 49 minutes 55 seconds after crib ignition

Figure 50 The wall system during the test – 54 minutes 55 seconds after crib ignition

Figure 51 The wall system on completion of the test – exposed face

Figure 52 The wall system on completion of the test – unexposed main wall face

Figure 53 *The wall system on completion of the test – unexposed wing and return wall*

Figure 54 *The wall system on completion of the test – behind AAC with plasterboard removed*

Figure 55 The wall system on completion of the test – behind AAC with insulation removed

JENSEN HUGHES

Jensen Hughes Fire Testing Pty Ltd
ABN 81 050 241 524

Melbourne – NATA accredited laboratory

409-411 Hammond Road
Dandenong South Vic 3175
Australia
T: +61 3 9767 1000